

SEPTEMBER 1961

Material Handling Engineering

Established in 1945 as FLOW Magazine

TRAVEL CHARTS

SUPPLIERS							
Dept	RA	B	A	D	C	E	Total
RA							
B	450		160	170			780
A	230				39		269
D					330	555	885
C	35	160				170	365
E	170	490	105	160			885
PS	115	170			555	160	1000
Total	1000	780	265	885	885		4180

SUPPLIERS							
Dept	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							

RA	A	C
B	D	E

RA	PS
A	B
C	D
E	F

SUPPLIERS							
Dept	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							

Order No.	Sequence of Operations	Time	Cost	Weight	Length
1	RA-A-E-D-PS	7000	100	70	1
2	RA-E-C-D-B-PS	1000	30	34	1
3	RA-B-B-C-D-E-PS	9000	90	110	1
4	RA-B-E-C-D-PS	2000	20	150	3
5	RA-C-A-E-D-PS	3000	600	1	7
6	RA-PS	C	-	82	1

a technique for reducing material handling

STEVENS RICE
UNIVERSITY MICROFILMS
313 NORTH FIRST ST.
ANN ARBOR MICH 48106
FIZ

TRUCKS, TRACTORS, AND LOADERS—VERSATILE YARD WORKERS
PACKAGING BETTER—NOT CHEAPER
PROJECT UPGRADE:
CONTROLLING MATERIAL IN DISTRIBUTION

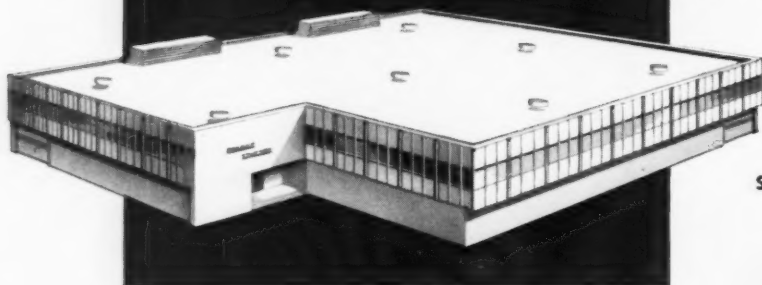


THE MAGAZINE OF MATERIAL FLOW MANAGEMENT

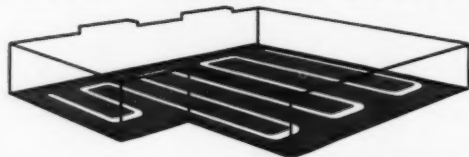
Curb Service Sugar Delivery 58
Driverless Tractor in Heavy Industry 74

Faultless Casters

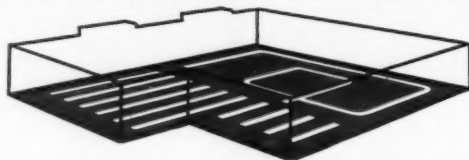
You Can Utilize Production
as Efficiently, and Change Plant Layout as Needed!



Today, your production line can
move in a serpentine pattern



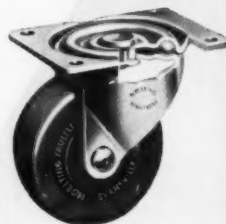
...tomorrow it can be changed
to a straight-line or circular flow



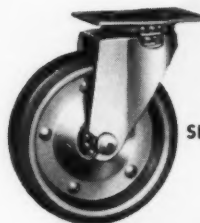
A fluid Faultless Castered production line is quickly reshaped as needed . . . to suit new products, design changes, retooling, time-and-motion study recommendations, etc. Also Faultless Castered trucks, dollies, racks, carts can transport your manufactured products outdoors for yard stocking. Whatever your production line load requirements, floor surfaces, space limitations, Faultless engineers the precision casters to meet your specific requirements and limitations.

ASK YOUR DISTRIBUTOR: Your nearby Faultless Industrial Distributor maintains a substantial inventory of Faultless Casters for immediate delivery. He and one of the strategically located Faultless Sales Engineers are available to work with you on every handling problem in your plant. Or write for complete information.

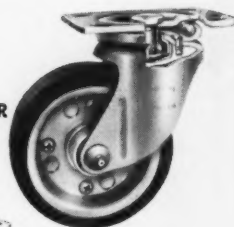
GENERAL
DUTY
SERIES 100 CASTER



LIGHT
DUTY
SERIES 400 CASTER



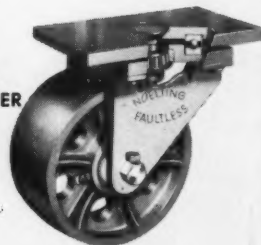
MEDIUM
DUTY
SERIES L900 CASTER



HEAVY
DUTY
SERIES H900 CASTER



EXTRA-
HEAVY
DUTY
SERIES 1300 CASTER



NOELTING
Faultless Caster Corporation Evansville 7, Indiana
Casters

Branch Offices in principal cities; see the Yellow Pages of the
telephone book under "Casters". Canada: Stratford, Ontario
Circle 38 on Reader Service Card



RUGGED!

New NEOTHANE Tire can tote 2 to 4 times the load 4 times longer

Stack the NEOTHANE up against any conventional tires — under the worst conditions this remarkable Goodyear industrial “solid” will outlast the others as much as 4 times, even when lugging 2 to 4 times the load.

Secret of this unmatched toughness is a new Goodyear polyurethane development that has amazing durability combined with resiliency. Photo above taken through heavy plate glass shows that NEOTHANE tires roll over metal chips, splinters, even broken glass with virtually no gouging or cutting. They won't swell or turn

spongy when driven through water, oil, grease, solvents or acids.

Tough as they are, however, NEOTHANE tires “give” enough to stand up under rough going. And they're harmless to polished floors. If your service is really tough and if your tire dollars aren't buying enough mileage, why not try NEOTHANE? Full details are on tap at your Goodyear Dealer's. Or write Goodyear, Industrial Tire Sales, Akron 16, Ohio. Remember — lots of good things come from Goodyear.

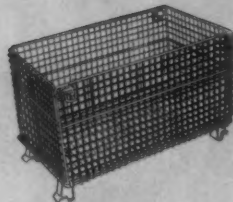
Buy and Specify NEOTHANE Industrial Tires by

GOODYEAR

Neothane—T.M. The Goodyear Tire & Rubber Company, Akron, Ohio

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

Circle 44 on Reader Service Card



'Junior' Model 3220
32" long, 20" wide
by 16" high—with
fold-down feature.
500 pound capacity.



'Junior' Model SGC-3220
32" long, 20" wide by 16"
high with reinforced
Type C Side Gate,
fold-down feature.
500 pound capacity.



'Junior' Model 2016
20" long, 16" wide
by 12" high, no
fold-down feature.
200 pound capacity.



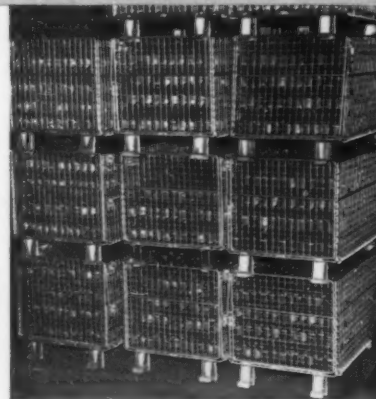
Junior PALLETAINERS

SOLVE ASSEMBLY LINE PROBLEMS



'Junior' Model SGC 3220—Most popular model of the 'Junior' line is equipped with a Type C side access gate for greater convenience on the line, warehouse or temporary storage.

'Junior' Palletainer models 3220 and SGC-3220 (with gate) fold down quickly and easily to save over 75% of the open area.

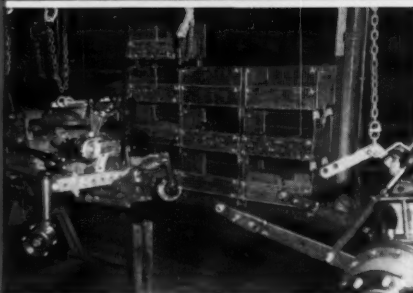
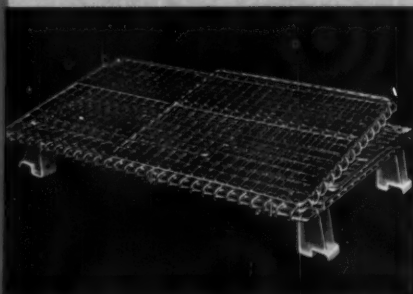


A typical example of how 'Juniors' are used to temporarily store and protect delicate electrical components. Special leg design makes stacking fast and safe.

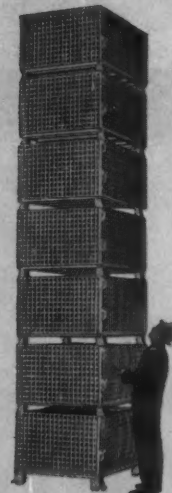
Got a production problem? Whether it's a pressroom, foundry or assembly line, you will find the new 'Junior' Palletainers are the practical, inexpensive answer you've been seeking. See, here, how these versatile, engineered parts containers find key places for themselves!

'Juniors' are a "natural" for stampings, finished parts, delicate components—even rough forgings. They can be moved quickly, easily—anywhere. Special fabricated leg design permits faster, safer, higher stacking as well as full 8-way fork truck entry. They're reinforced, electro-welded steel rod construction . . . virtually indestructible.

Try a few sample* 'Juniors' in your plant, and see for yourself how easily they save your time, space and equipment dollars.



Palletainer 'Juniors' help speed production—assembly line operations. Photo above illustrates one plant's method of handling precision components right in the 'line' work area. Side gate eliminates long reach and products are always clean, visible—easily accessible.



Regular Palletainers and 'Juniors' alike save valuable floor space. They stack higher with complete safety. Contents always protected—always visible.



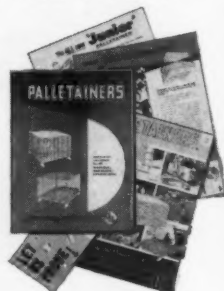
'Juniors' afford a new concept in on-the-spot part bin selection convenience. Units stack at any convenient location and side access gates may be opened without affecting the strength or rigidity of the unit.



Anything . . . absolutely anything retained by 1 1/2" mesh can be more effectively, economically and safely stored in USP Palletainer 'Juniors'. 'Juniors' eliminate old style bins, boxes and barrels—and take the guess-work out of warehouse parts selection.

SPECIAL OFFER

Try these tested, proved-in-service containers on a 60 day memo billing basis. Your obligation is freight, only. Also—write today for additional Palletainer information to meet your special handling needs.



UNION STEEL PRODUCTS CO.

Palletainers are also manufactured under license by: BANNER METALS, INC., Compton (Los Angeles), California; and Croname LTD. Waterloo, Quebec, Canada

Circle 124 on Reader Service Card

reader's guide to

SEPTEMBER 1961

Material Handling Engineering

volume 16 number 9

Established in 1945 as FLOW Magazine

TRAVEL CHARTS POINT OUT MH BENEFITS 51

A way to improve layout so you improve material handling.

MONORAIL SYSTEM SPEEDS PAPER ROLLS TO SHIPPING 55

An exclusive report on a first-of-its-kind installation for automatic roll handling.

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- 108 ... Industry News
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CURB SERVICE SPEEDS SUGAR DELIVERY 58

A handful of men and pneumatic conveying process millions of pounds every month.

PACKAGING BETTER—NOT CHEAPER 60

Don't get stampeded by unreasonable demands for package cost reduction.

CONTROLLING MATERIAL DISTRIBUTION 62

Seventh article in the Project Upgrade series explains why the MH man must influence distribution policy.

TRUCKS, TRACTORS, AND LOADERS—VERSATILE YARD WORKERS 68

Forks and attachments keep many a yard operation humming.

INTELLIGENT TRACTOR DOES JUST WHAT IT'S TOLD 75

Driverless train doubles as delivery vehicle and portable work station.

BIG HANDLING FOR BIG MACHINES 76

How Ingersoll Milling handles parts for their giant machines.



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Tubing for rocker arm shaft

Tubing for chrome trim strip

Cleveland Container TUBING

protects spare parts of all sizes and kinds

The precision of a rocker arm shaft... the mirror finish of a chrome trim strip... or any delicate part that must remain in perfect condition until used... is safeguarded by Cleveland Container tubing. A spirally wound label provides identification.

Correctly designed tubing makes packing simple, handling easy, storage no problem! Best of all—our made-to-order tubing is available at low unit cost!

The ends of both tubes shown above are closed with plugs. The plug in one end is inserted in our plant... the other after the part is packaged. Tubing for the rocker arm shaft uses metal capped insert plugs which are glued in place. Tubing for the chrome trim strip uses paper plugs which are stapled in place. These are only two examples of numerous applications.

COMPLETE INDUSTRIAL TUBING

We make tubing of every type and size in chipboard, jute or kraft in lengths and wall thicknesses specified. Diameters range from soda straw thinness to 24". For added protection, tubing may be wax impregnated or lined with special greaseproof or anticorrosive papers. Pre-printed labels can be furnished for all tubing. ASK OUR NEAREST PLANT FOR A QUOTATION.

THE CLEVELAND CONTAINER COMPANY

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MATERIAL HANDLING ENGINEERING

transportation ideas from **CUSHMAN**. pay off in savings...

the gasoline powered **TRUCKSTER**
now with new, more powerful,
die-cast aluminum
engines!



More for your transportation dollar because it's designed specifically for light hauling applications. Carries 800 pound payload. Built-in economy (low initial investment, minimum operating and maintenance costs) eliminates waste. Because of its compact size, the Truckster operates where other vehicles can't. It's ideal inside the plant, and on the street—goes everywhere, parks anywhere. Two new, advanced engines: Twin Super Husky, two cylinders, 18 HP; Super Husky, single cylinder, 9 HP. Optional equipment includes auxiliary transmission and all-weather cab.

the electric powered
TRUCKSTER.

An efficient workhorse inside the plant or on short hauls. Maneuvers easily in tight quarters—carries half-ton payload up steep ramps and through narrow aisles. Offers built-in economy—low initial cost, minimum maintenance and operating cost. Up to 50 miles on a charge. Optional equipment includes all-weather cab, personnel carrier (shown).



the one and two passenger

INDUSTRIAL ELECTRICS

Either of these vehicles provides the ideal way to put supervisory, security and service personnel on wheels—and save 67% of the time they ordinarily spend walking. One-Passenger Electric operates in 25-inch passageways, has two cubic foot carrier space. Two-Passenger Electric operates in 40-inch passageways, carries quarter-ton payload. Either operates up to 40 miles on a charge.

Actual TRUCKSTER cost analysis now available

A coast to coast survey of typical Truckster users proves utility and greatest economy.

Operating costs for the Gasoline Truckster in wide range of applications ran as low as 0.6 cent a mile, averaged 1.18 cents. Complete survey results in condensed form available on request.

Ask your dealer for demonstration or write



CUSHMAN MOTORS

1016 No. 21st, Lincoln, Nebraska

A subsidiary of Outboard Marine Corporation

Please send Cost Analysis Report and descriptive literature.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____

IMPORTANT ANNOUNCEMENT

to Floor Truck Users

NOW...A 5-YEAR GUARANTEE ON

Nutting

TRUCKS AND TRAILERS

Every Nutting truck, trailer and dolly is now guaranteed in writing for five (5) full years. With this written guarantee you receive a detachable business reply card for registering it at our home office.

Why This Exceptional Guarantee?

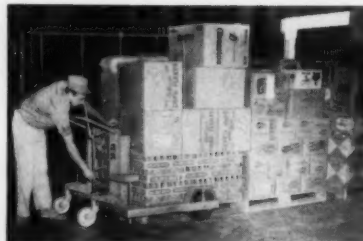
Our customers know that Nutting products are designed, engineered and manufactured to give the best in performance and durability . . . but we want to assure you, the prospective new customer—in the most convincing way we know—of the reliability of Nutting equipment. This guarantee is added proof that when you buy Nutting, *you buy the finest.*

Nutting gives you . . . a choice of over 1,000 standard models, quick delivery and, *a 5-year written guarantee!*

If you need trucks, trailers or dollies, discuss your requirements now with a Nutting representative. He can give you valuable help with your material handling problems, whether they involve manual and/or power applications.

For free literature use reader service card — or write direct.

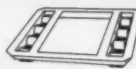
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104 West Division Street, Faribault, Minnesota
Service to Business and Industry Since 1891
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3 IN 1—Serves as a dragline, order picking and pallet truck. For warehousing and distribution operations.



Cases and carton trucks for in-plant use and off truck delivery.



Pallet dollies. Tilt and non-tilt styles.

Strong, lightweight, all aluminum platform trucks—also wood and steel frame platform trucks—tilt or non-tilt styles.



Jacks and semi-live skids for transport and mobile storage.



Heavy duty 2 wheelers for cases, boxes and crates.



Nutting makes all types of trucks for use with sub floor and overhead conveyors.

VIEWPOINT

Sir:

In the letter of Jerry Le Boyer, published on pages 8 and 10 of the June issue of *MATERIAL HANDLING ENGINEERING*, he states ". . . that being a registered engineer is definitely a plus factor, but it should not be considered a requirement of a materials handling engineer." I must take exception to his statement and call attention to Article 145, Section 7201(4) of the New York State Education Law, which defines professional engineering as follows:

"4. A person practices professional engineering, within the meaning and intent of this article, who holds himself out as able to perform, or who does perform any professional service, such as consultation, investigation, evaluation, planning, design, or responsible supervision of construction or operation, in connection with any public or private utilities, structures, buildings, machines, equipment, processes, works, or projects, wherein the safeguarding of life, health or property is concerned or involved, when such professional service requires the application of engineering principles and data."

Unless material handling equipment is properly designed it can be a menace to life and property. The design either requires the application of engineering principles and data, or the term "materials handling engineer" used by Mr. Le Boyer is a fiction.

The law makes no distinction, nor should it, between various fields of engineering. Whenever an engineer, in whatever field, undertakes to practice professional engineering within the definition given above, he should be a licensed professional engineer.

Section 7211 of the Education Law states that it shall be a misdemeanor for any person to practice or offer to practice professional engineering unless duly licensed and registered.

ALBERT H. MORGAN, P.E.
Executive Director
The New York State Society
of Professional Engineers

MATERIAL HANDLING ENGINEERING

*there's only
one company
you can get
any kind of
metal conveyor
belt from . . .*



It's true. **USS Cyclone** makes more kinds of metal conveyor belts than anyone else in the industry. Flexigrid, Flat wire or Woven wire, Cyclone will engineer it to fit your particular set of problems in your processing system. And then service it. We have 69 Cyclone Sales Offices across the country so you can get faster service from us than from anyone . . . no matter where you are. The next time you need a conveyor belt recommendation, call **USS Cyclone**. We're in the Yellow Pages under "Conveyor Belts—Metal."



This is a new **USS Cyclone** Conveyall belt installed in the Brooklyn plant of Dietetic Foods, Inc. It's 18-8 Type 302 Stainless Steel, woven in a true $\frac{1}{2}$ " x $\frac{1}{2}$ " mesh to carry glass-packaged products through a 57-foot pasteurizer and cooler. According to Mr. Ronald Kalmore, Dietetic's vice president and general sales manager, "After looking over the field, Conveyall proved to be the closest approach to ideal equipment for us." Conveyall's short pitch combined with its particular mesh enables the belt to turn on substantially smaller feed and discharge rollers without developing a chordal action which could tip over jars with small-diameter bases. And the small rollers made it possible to eliminate "dead plates" at both ends of the unit which enabled Dietetic to use conveyor-to-conveyor transfer. This eliminated time lag between bottles and prevents direct glass-to-glass contact, drastically reducing breakage potential.



This mark tells you a product
is made of modern, dependable Steel.

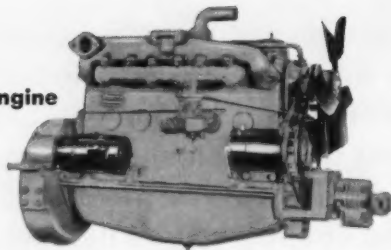


**American Steel and Wire
Division of
United States Steel**

Cyclone Sales Offices Coast to Coast

Circle 132 on Reader Service Card

POWER CRATER engine
6 cylinders



NEW POWER

Allis-Chalmers' OWN — POWER CRATER engine is engineered specifically for Allis-Chalmers lift trucks. Has unique crater-shaped combustion chamber that

sets up violent swirling turbulence for thorough mixture of air and fuel, resulting in responsive power and maximum fuel economy.

NEW MASTS AND FORKS

- Sturdy steel channels move easily over bearing-mounted load rollers.
- New piston-type cylinder with patented, self-adjusting packing minimizes maintenance.
- New forks have rounded ends and long taper for easy entry under loads. Forks are easily spaced with new spring-loaded latch.

NEW Allis-Chalmers Lift Trucks

NEW

F 60-24
6,000-lb capacity



F 70-24
7,000-lb capacity



NEW

Have your Allis-Chalmers dealer show you the many advantages of "F" series lift trucks

- Unusual grade-climbing ability due to power, balance and weight distribution.
- Familiar, automotive-type controls—wide, adjustable seat — unobstructed floor board.
- Easy, quick maintenance accessibility.
- Optional transmissions—constant-mesh, two-speed or POWER-SHIFT torque converter drive.
- Versatility of masts, carriages, forks and attachments.

For full information write for new Bulletin BU-680.

NEW

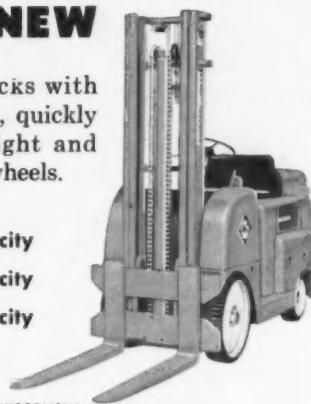
Special Purpose trucks with high underclearance, quickly removed counterweight and large-diameter drive wheels.

FS-60 — 6,000-lb capacity

FS-70 — 7,000-lb capacity

FS-80 — 8,000-lb capacity

POWER CRATER
is an Allis-Chalmers trademark.
ALLIS-CHALMERS MILWAUKEE 1, WISCONSIN



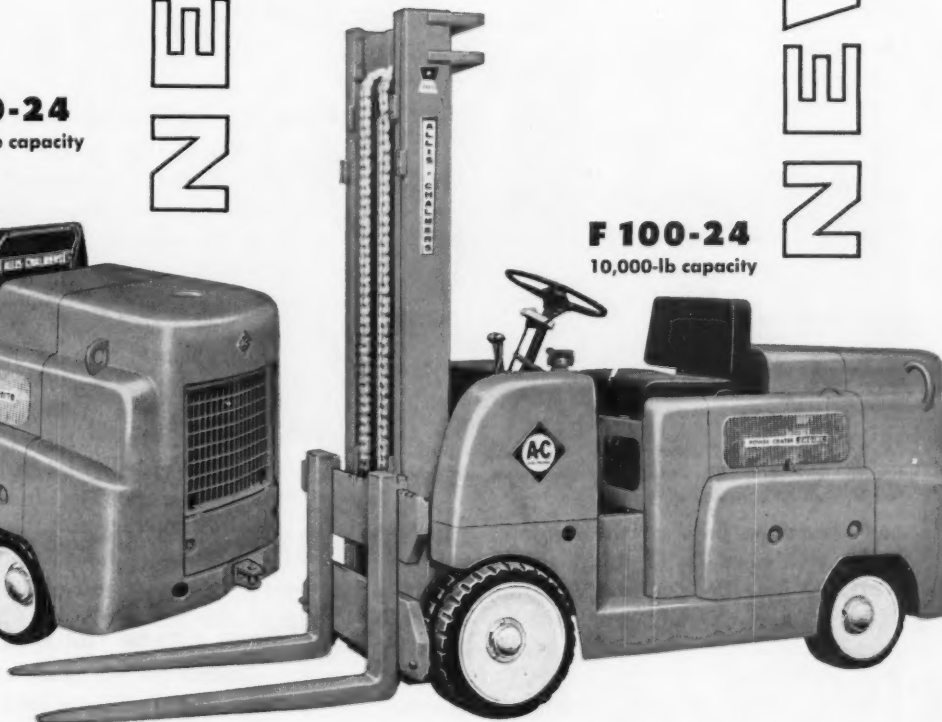
Give You More for Your Money!

NEW

NEW



F 80-24
8,000-lb capacity



F 100-24
10,000-lb capacity

ALLIS-CHALMERS

Compare and you'll choose Allis-Chalmers

Circle 2 on Reader Service Card



BH-174



NEWS ROUNDUP

Clark to promote handling on air

DOUGLAS AIRCRAFT Co. has licensed Clark Equipment Co. to make and sell a new system to float material on air. Called "Glide-Aire," it's similar to ground effect vehicles which travel on a cushion of air. MHE Editor Bernie Knill recently watched a demonstration, saw how controlled air pressure spread a thin layer of air under a load, forming a nearly frictionless air bearing. He watched a man on a platform moved across a room with only the slightest push. The system may be used in aircraft, rail cars, truck trailers, freight terminals, and warehouses. Clark expects to have production models available in 1962.

Upgrade in Philadelphia

SOME OF THE MOST MH-conscious companies in Philadelphia sent their top handling men to MHE's second Project Upgrade Seminar, recently held in that city. They came in response to an invitation to hear a day-long discussion of the advanced MH concepts which



BACK TO THE WALL, Consulting Editor Ralph Sims (center) defends an opinion during coffee-break.

have been the basis of the Project Upgrade series (see page 62 for this month's article).

MHE Editor Bernie Knill and Ralph Sims, author of the Upgrade articles, worked with a trio of experts on various aspects of material flow management.

George Shea, material handling engineer, Johnson & Johnson. One of the startling points made in Shea's talk was that there is no point at which a system can be said to be complete; even the best systems have to be reevaluated regularly in the light of new technological developments.

Dr. John Mauchly, president, Mauchly Associates, Inc. Dr. Mauchly, inventor of the electronic computer, explained how you can make mathematical models of handling problems and develop formulas to solve them. He described the advantages and disadvantages of the various kinds of computers for this kind of job.

James A. Commins, product manager, Atronic Products, Div. of General Atronics. Commins talked about controlling material flow with electronic and mechanical devices.

MHE given national safety award

MATERIAL HANDLING ENGINEERING MAGAZINE received a public interest award from the National Safety Council for "exceptional service to safety" in 1960. The presentation was for a safety section in the December, 1960, issue.

Upswing in Engineered Systems

A RASH OF ORDERS in June for highly engineered MH systems indicates that company managers are placing a vote of confidence in material handling as a means of fighting the profit squeeze. These new orders were a big factor in raising material handling equipment bookings to their highest point this year: 175.51, against a previous high of 136.96. This figure was reported in the Monthly Bookings Index prepared by The Material Handling Institute, Inc. It represents the dollar volume of incoming orders reported by MH equipment manufacturers. The Index uses 100 as the monthly average for the statistical base year 1954.

MH firms signed for World's Fair

COMMITTED TO LARGE DISPLAYS at the New York World's Fair in 1964-65 are Clark, Caterpillar Tractor, Gould Batteries, Yale & Towne, International Harvester, and Cummins Diesel. They'll be in the transportation area where smaller material handling firms can rent space in a special Transportation Pavilion.

Continued on page 12

TOWMOSTATIC DRIVE

... One pedal for
forward, stop and reverse



TOWMOTOR'S ON THE MOVE

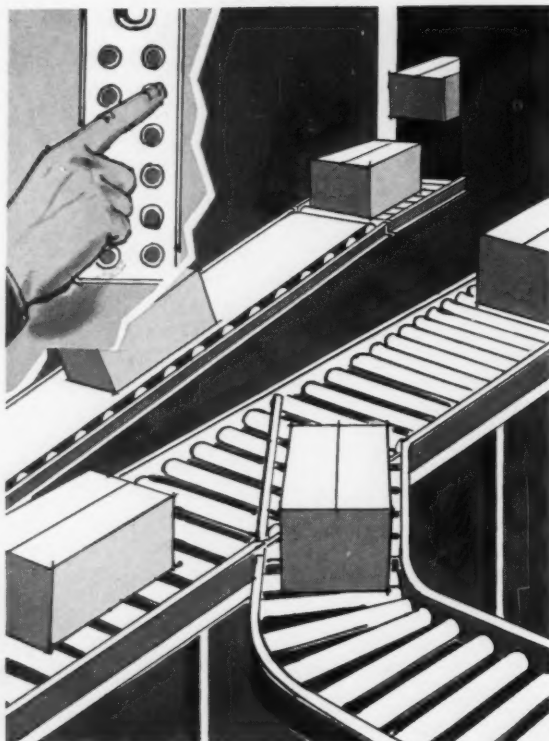
—creating new uses for Towmotor Towmostatic Drive, the foot-controlled hydrostatic lift truck transmission originated by Towmotor engineers. On the move, applying this unique drive in designing unusual types of fork lift trucks that maneuver with great agility—that speed handling, utilize “lost” space, lower costs amazingly, perform many things impossible to do with conventional trucks. Keep on the move with Towmotor fork lift trucks—made only by TOWMOTOR CORPORATION, CLEVELAND 12, OHIO.



Circle 118 on Reader Service Card

Stroboscopic photo above illustrates how toe pressure on treadle moves lift truck forward instantly—how heel pressure results in smooth reverse travel—in units equipped with Towmotor Towmostatic Drive. This foot-controlled transmission is now available on 7 Towmotor fork lift trucks including the 3 new models pictured below.





CONVEYORS DO MORE JOBS WITH VERSATILE MAITROL

Conveyors almost think for themselves when they're equipped with **MAITROL***, the compatible magnetic control system.

MAITROL automatically dispatches materials. It selects and assembles items from a storage conveyor or from bulk material hoppers. It is compatible with virtually any conveyor scheme using any number of stations in any combination of vertical and horizontal applications. No wiring between stations.

MAITROL can be actuated by pushbutton, dialing, key punch or pre-set programming. **MAITROL** is unaffected by dirt, grease, light, temperature or electrical interference.

WHATEVER YOU HANDLE — mechanical parts, cartons, paperwork, mail, books, bulk materials—**MAITROL** may well be able to speed your operation and save you money. Why not find out?

*Registered U. S. Patent Office

TECHNICAL INFORMATION on the **MAITROL** system is free for the asking. It shows typical uses in product assembly, order filling and paperwork distribution. Write today.

Maico electronics inc.
A SUBSIDIARY OF W. A. SHEAFFER PEN COMPANY

21 North Third Street • Minneapolis 1, Minnesota
Circle 67 on Reader Service Card



NEWS ROUNDUP

Handling firms get government contracts

BAKER INDUSTRIAL TRUCK DIV., Otis Elevator Co., received two contracts, totaling \$3,300,000, for gasoline lift trucks of 4,000- and 6,000-lb. capacity. This brings government orders for Baker trucks during fiscal 1961 to 1,200 lift trucks.

ELECTRO NUCLEAR SYSTEMS CORP., Minneapolis, was awarded a \$97,500 contract by the Navy for an automatic storage system. Automatic controls will permit the loading and picking of pallet loads up to 500 lb. each from 1,000 storage compartments.

YALE MATERIAL HANDLING DIVISION, The Yale & Towne Manufacturing Co., received a \$1,265,000 contract for 287 pneumatic tire, gasoline lift trucks of 6,000-lb. capacity.

ALVEY-FERGUSON Co. won a \$1,700,000 contract to install a highly automatic warehousing system at the Naval Supply Center, Oakland, Calif. There will be 23,000 ft. of conveyor, to be ready by next February. Principal



subcontractor is the Electronic Nuclear Systems Corp., Minneapolis. Photo shows Navy Capt. C. A. Appleby, Washington, D. C., handing the contract to Mrs. J. B. Spain, president of Alvey-Ferguson.

Turn key ice cream freezing system

THE CHERRY-BURRELL CORP. plans to offer a complete rack type, fast hardening freezing system for ice cream. Packaged ice cream will harden in 3 or 4 hours, compared with 12 to 24 hours for other methods. Parts suppliers include Baker Perkins Inc., The King Co., and Samuel Olson Mfg. Co.

Continued on page 14

MATERIAL HANDLING ENGINEERING



FRAGILE

Jet Engine— handle with GO-DEVIL by DROTT

When a Jet Engine is pulled for maintenance at this major airport the call goes out for Go-Devil, the only crane capable of hoisting, transporting on its deck, and spotting loads up to 6,000 lbs with the help of its 360° rotating boom.

Here's the one materials handling unit you can count on winter and summer, indoors and out, for the toughest or most precision applications. Front wheel power and rear wheel drive combined with a compact 74" width gets you in and out of the in-plant tight spots. Complete hydraulic con-

trols make for smooth load handling without shock or jar. The unique no-spin differential and deep tread tires take you and the load effortlessly through mud and snow.

If precision, performance and price are your buying yardsticks, put Go-Devil to work today. Its applications are limited only by your imagination. Two models to choose from. The 60 RM2 with a 6,000 lb. lifting capacity and the 20 RM2 with a 2,000 lb. lifting capacity.

IT REACHES	IT LIFTS	IT SWINGS	IT TRAVELS	IT HAULS
24' up ... 16' out	6000 lbs. with safety	360° continu- ous rotation	up to 19 MPH	on 50 sq. ft. of deck area

DROTT
MANUFACTURING CORP.
Milwaukee 15, Wisconsin

CLIP AND MAIL TO

DROTT MANUFACTURING CORP.
Materials Handling Division

3126 S. 27th Street • Milwaukee 15, Wisconsin

I'd like more information on the 60 RM2 Go-Devil.
Please rush bulletin MH602.

Name.....

Title.....

Company Name.....

Company Address.....

City..... Zone..... State.....



New Rubber-Armored, Rubber-Hinged **CLARK**



DURADOR

Takes Pounding in Stride!

New self-closing DURADOR takes all the punishment your fork truck jockeys can dish out. Permanently-bonded rubber coating over sturdy door panels prevents gouging, splintering.

DURADOR rides with the force of the blow — doesn't resist it. Full-length flexible hinges prevent misaligning — return DURADOR to closed position every time, reducing drafts. Combines the best of a rigid door with a rubber curtain. Functions silently with no moving parts to go haywire. Needs **no** maintenance. Round, shatter-proof windows let driver see what's on the other side.

DURADOR comes in all stock and intermediate sizes. Applies easily at **any** doorway. Isn't this the door you've been wanting? Write for Architects' specifications and details.

CLARK DOOR
COMPANY, INC. (since 1878)

514 Hunterdon St.
Newark 8, N. J.

Makers of Prest-O-Matic and Shock Absorber Doors
Circle 15 on Reader Service Card

NEWS ROUNDUP

Indice de modelos

THE SPANISH WORDS IN THE TITLE refer to a selector guide now available from the Automatic Transportation Co. This Spanish edition of 20 pages lists more than 150 lift truck models, including a number of selection factors for each. You can get a free copy from Automatic, 149 W. 87th St., Chicago 20, Illinois.

Remote-controlled switcher locomotive

UNION SWITCH & SIGNAL DIVISION, Westinghouse Air Brake Co., will show you a remote-controlled locomotive at its Swissvale, Pa., plant. The operator, carrying only five lb. of equipment, can release brakes, start the locomotive in either direction, controls its speed,



allow it to coast, apply the brakes, blow a whistle, sound a bell, apply sand, and uncouple automatically. Control signals transmit to the locomotive as a carrier modulated by a single or combination of audio tone frequencies. The locomotive apparatus mainly includes a receiver with a demodulating unit and control relays.

Good system could win you \$2,000

THE INDUSTRIAL TRUCK DIVISION Clark Equipment Co., is sponsoring its ninth annual essay contest. Theme: Cost Reduction Through Material Handling. First prize is \$2,000, with nine other papers dividing \$3,000. Basis of judgment: analysis of subject, value to the field, originality, organization of material, use of visual aids. Discuss one or more unsolved handling problem and propose solutions for cost reduction. The contest closes April 1. Get details and rules from local chapters of the American Material Handling Society or from Clark's Industrial Truck Division, Battle Creek, Michigan.

MATERIAL HANDLING ENGINEERING

NEW **AUTOMATIC**[®] PALLET TRUCK WITH COMPACT PRICE AND SIZE

★ **MODEL RP**
Capacities 4000 and 6000 lbs.

★ Works in as little as 52" intersecting aisles.

★ Simple, conveniently located,
easy-to-operate controls.

★ Accepts 12 or 24 v. batteries.

★ Speeds up to 5.25 mph.



★ Spring-loaded casters increase
stability, safety.

★ Interchangeable parts with other AUTOMATIC
trucks. All parts easily accessible.

AUTOMATIC[®]

A Division of The Yale & Towne Manufacturing Company
141 West 87th St., Dept. P1,
Chicago 20, Ill.

We've re-engineered our pallet truck line . . . and you're the big winner. More functional design permits a lower price tag and gives you a better truck in the bargain. For example, the new Model RP uses a special caster system for greater cornering stability and safety. Casters at the two rear corners are spring-loaded to maintain constant contact with the floor. A rugged, one-piece frame concentrates the weight on traction and load-bearing wheels, enabling casters to pivot easily.

AUTOMATIC QUALITY THROUGHOUT

Model RP is equipped with the famous AUTOMATIC Class H silicone-insulated drive motor which is specially built for heavy-duty use and long life. A unique spring-applied, hydraulically-released brake gives long service without complicated linkage adjustment. The battery can be removed from either side or by overhead chain hoist. Extra room and operator comfort have been provided.



DOES THE WORK OF TWO WALKIES ON SOME JOBS. Compared to walkies, Model RP is twice as fast, twice as efficient for medium and long distance horizontal movement of pallets.

Send for literature

Please send specification sheets on new
Model RP Pallet Truck.

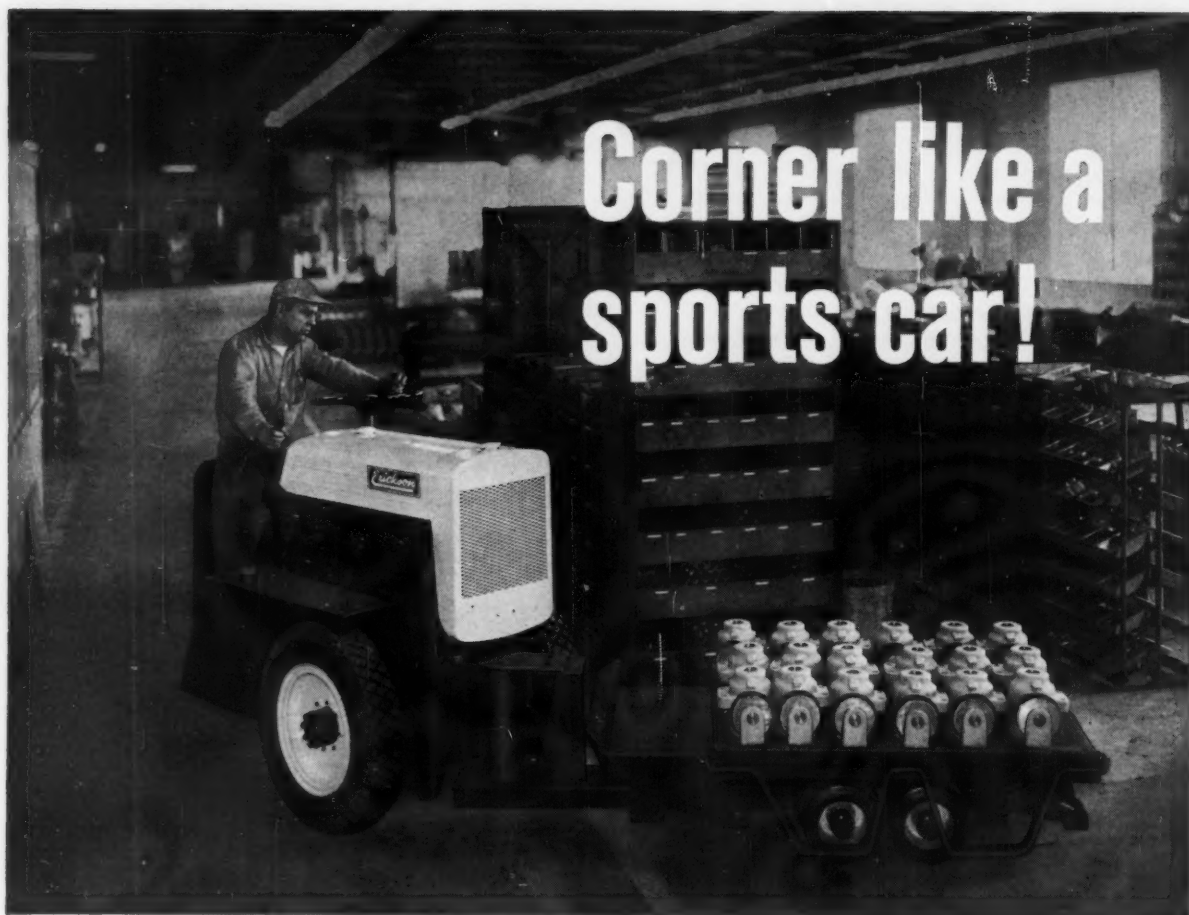


Name _____ Title _____

Company _____

Street _____

City _____ Zone _____ State _____

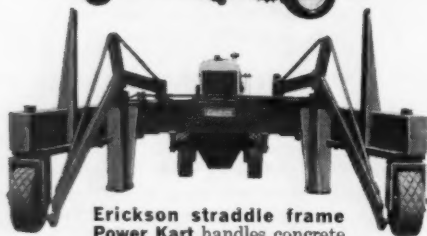


Corner like a sports car!

ERICKSON PLATFORM TRUCKS with articulated steering



Erickson scissor-lift Kart.
All raises the load platform to 10 feet or higher.



Erickson straddle frame Power Kart handles concrete structural members, other bulky and awkward loads.

Pivot in, pivot out. Snake the load platform under a pallet—lift and run with it down aisles too narrow for any other lift truck—corner 90° in a 90° radius to spot loads in any nook and cranny!

You can handle materials like that with Erickson platform trucks. The exclusive articulated pivot between load platform and tractor coupled with power steering gives you close quarter maneuverability no other truck can approach. Because the load is centered directly over the load wheels, no counterweight is necessary. This elimination of dead weight allows savings of up to 50% in initial cost and operating expense as compared with conventional fork lift trucks.

Erickson platform trucks can be customized to your needs with platform of almost any length and load capacities from 5,000 lbs. to 20,000 lbs. and higher. Write for complete, detailed information. Erickson Power Lift Trucks, Inc. 215 St. Anthony Blvd., Minneapolis 18, Minnesota.

ERICKSON

Customized Lift Trucks

Circle 34 on Reader Service Card

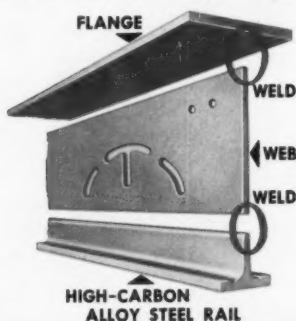
**CLEVELAND TRAMRAIL
ANNOUNCES**



A MAJOR TRACK DEVELOPMENT FOR OVERHEAD MATERIALS HANDLING

Continuous automatically— controlled welds

Flange, web and rail joined by continuous automatic welds assure reliability.



Hard, raised, long-life treads

Rail especially rolled of high-carbon alloy steel for maximum durability. Treads are extra hard, raised, flat and smooth—for easy load movement—prevent peening—longer wear.

another exciting "first"

An outstanding advancement in a long series pioneered by Cleveland Tramrail to make it the leader in the overhead materials handling equipment industry. An entirely new track that had to be great to be better—result of years of research.

a far better track

Balanced design with parts proportioned exactly to provide maximum strength with minimum weight. Greater rigidity to withstand severe working conditions.

easier, faster to erect

Straight, true, smooth. All dimensions held to greater accuracy. Tarca Track matches with existing Cleveland Tramrail installations.

large range of sizes

10 standard sizes from 8" to 20" deep. Special sizes can be fabricated for unusual applications.

Ask for this helpful booklet—No. 2032

Covers all major features the buyer should know about overhead materials handling equipment. Has complete story on Tarca Track. Contains detailed equipment specifications and handy proposal evaluation form.



**CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.**

5899 EAST 284th STREET · WICKLIFFE, OHIO



Most Installations of
Cleveland Tramrail Equipment
pay for themselves within
one or two years.

*Trade-mark of durability and strength
—punched into all Tarca Tracks.*

One of the more recent important materials handling developments initiated and engineered by Cleveland Tramrail for the Wire and Rod Industry is the hydraulically-operated grab for storing coils in vertical piles. This device picks up several coils at a time and works in either vertical or horizontal positions.



Simple inexpensive hand-propelled Cleveland Tramrail cranes are filling a mighty important need in a vast number of places. For instance, in this warehouse of a glass distributor, heavy awkward cases are handled by one man and piled high, thereby utilizing the storage space to the maximum.

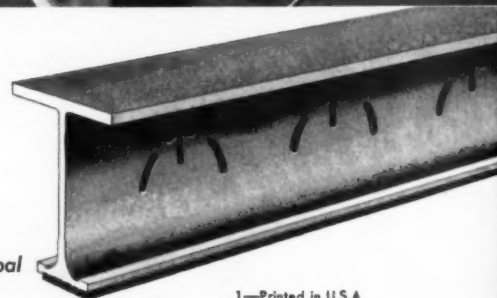
Cleveland Tramrail gantry cranes have long been popular because they increase efficiency of many local handling situations. They will operate under overhead cranes without interference. Tramrail gantries are built in many types and sizes, with manual or electric drives.



*Your Cleveland Tramrail Sales Engineer is Qualified to give you
the Complete Design and Application Story on This Revolutionary*

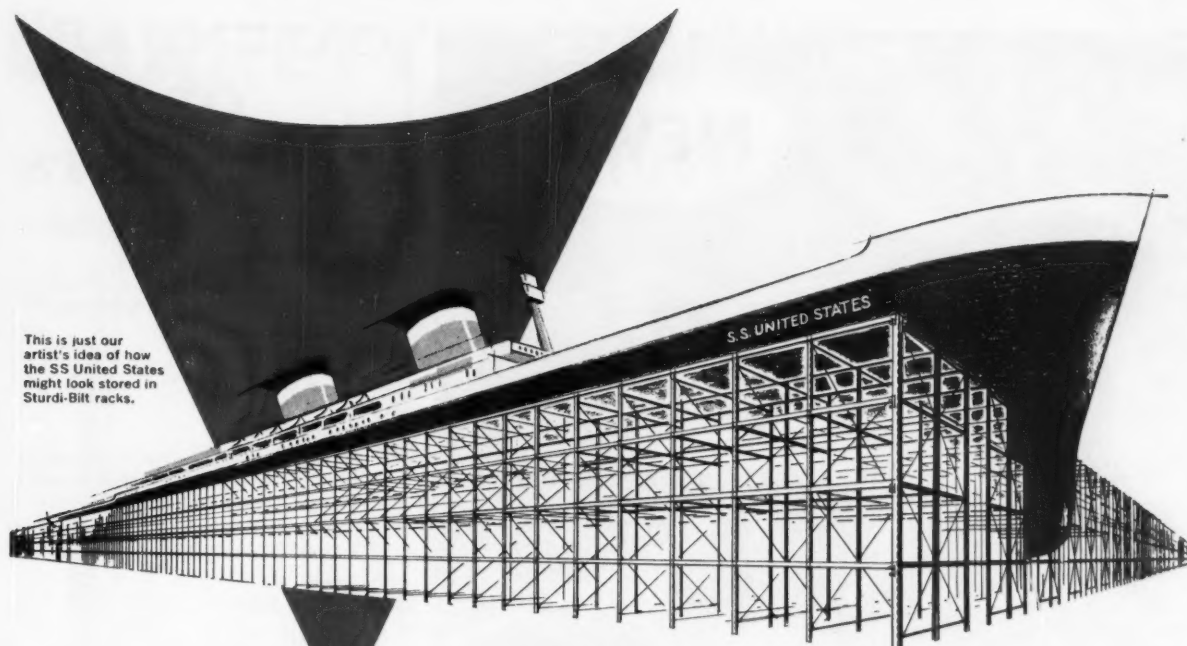
NEW TARCA TRACK

Cleveland Tramrail is represented by competent, experienced engineers in all principal cities of the United States and Canada. Contact address on other side.



1—Printed in U.S.A.

This is just our artist's idea of how the SS United States might look stored in Sturdi-Bilt racks.



no matter how **BIG** your storage problem is

**STURDI
BILT
HAS THE
ANSWER**

Let this symbol be your guide



BUY BETTER—BUY STURDI-BILT

The most advanced builder of racks in the world can engineer the answer to your storage problems, no matter how small or large. Whether you have outgrown your present facilities or have a brand-new set of worries, STURDI-BILT specialists are ready to help you work out a custom plan, tailored to fit your own individual needs, with maximum economy and complete dependability.

And, here's important news, too. You can now buy all your rack needs on the new exclusive STURDI-BILT TIME-PAY PLAN. Take up to 5 YEARS to pay without tying up your own working capital. You buy better when you buy STURDI-BILT because only STURDI-BILT racks have all these advantages.

- unmatched safety and stability
- fast, easy assembly
 - complete adjustability
 - add-a-section versatility
 - patented FLOAT-WEDGE construction

STURDI-BILT Material Handling Division
Union Asbestos and Rubber Company
332 South Michigan Avenue, Dept. MHE-9
Chicago 4, Illinois

- ☐ Please send me helpful new booklet,
STORAGE PLANNING GUIDE
- ☐ Please send me data on the TIME-PAY plan

NAME.....TITLE.....

COMPANY.....

ADDRESS.....

CITY.....ZONE.....STATE.....



EXCLUSIVE NEW FEATURES put the "85" in a class by itself for saving you money in sweeping.

**TENNANT "85" SWEEPER pays for itself fast...
sweeps a full mile of aisles
in less than 30 minutes!**

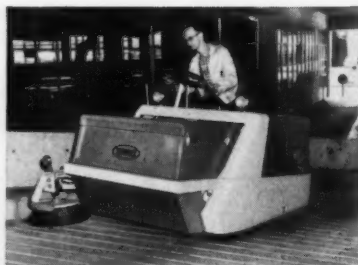
Gliding swiftly over your floors, this all-new, superbly engineered TENNANT "85" Sweeper sets a new standard in cost-saving cleanliness... plus heavy-duty dependability for any job.

In 30 minutes, for example, it easily sweeps a full mile of 8 ft. aisle... or over 100,000 sq. ft. per hour in open areas. Leaves an ultra-clean 53" path.

Saves up to 60% in hand-sweeping costs, doing the work of 3 to 12 men. New hydraulic drive, floating brush and simple controls make it easy to use. Your operator does a top notch job the first time.

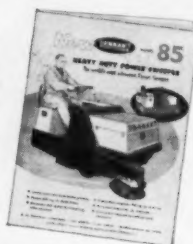
New features assure exceptional cleanliness, plus added capacity for difficult jobs. Examples: Largest filter (66 sq. ft.) on any industrial sweeper... powerful 18 h.p. engine... new constant-speed brushes and vacuum... 16" wheels for good traction on ramps.

100% mechanized operation saves time. Single pedal for forward-reverse; just touch button to clean dust filters; twist of knob dumps 800 lb. load. Usually pays for itself in less than a year.



HEAVY-DUTY "85" has ample power for grueling use on ramps and inclines and over bumpy pavements. Path swept (53") is ideal width for sweeping most factory aisles in one round trip.

NEW BULLETIN gives full details on how the "85" slashes sweeping costs. To receive it, simply clip this ad to your letterhead, jot down your name and title and mail to G. H. Tennant Co., 707 K N. Lilac Drive, Minneapolis 22, Minn.



**HEAVY-DUTY
POWER
SWEEPERS**

INDUSTRY'S MOST COMPLETE

FLOOR MAINTENANCE SYSTEMS

Circle 116 on Reader Service Card

CALENDAR OF EVENTS

September 6-8

Second International Cargo Handling and Coordinated Transportation Exposition
Pier Nine, North River
New York City

September 18-23

6th Annual Midwest Work Course on Plant Layout and Facilities Planning
The University of Kansas Extension Center
Kansas City, Kansas

September 19

Meeting
Electric Overhead Crane Institute
Palmer House
Chicago

October 16-20

National Safety Congress
Chicago

October 31, Nov. 1-2

10th Canadian National Packaging Exposition
Automotive Building, Exhibition Park
Toronto

November 4-7

Eighth Annual Building Materials Exposition
McCormick Place
Chicago

November 7-10

Packaging Machinery Manufacturers Institute Show
Cobo Hall
Detroit

May 8-18, 1962

Mechanical Handling Exhibition
Earls Court
London

May 9-11, 1962

Western Material Handling & Packaging Show
Great Western Exhibit Center
Los Angeles

June 19-21, 1962

Material Handling Institute Great Lakes Show
Cobo Hall
Detroit

MATERIAL HANDLING ENGINEERING

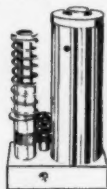
BARRETT MODEL HX is different from any pallet truck you ever used

Let "Little Mac" show you built-in features that make HX extra light
...extra strong...maneuverable in narrow aisles...easy to adjust.

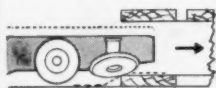
- 1 **HYDRAULIC PUMP AND RAM**...a self-contained package unit. Remove retainer plates; unit slips out.
- 2 **ALL-WELDED**, ribbed design for light weight and exceptional strength.
- 3 **"FLYING SAUCERS"**...entry wheels at end of forks are angular-mounted crawler type to permit truck to crawl up and onto bottom board of double-faced pallet. Prevent forks from pushing empty pallet away when truck enters.
- 4 **FULL 4½" LIFT**...10 strokes (full 4" lift...9 strokes).
- 5 **OVERLOAD BY-PASS VALVE**...factory-sealed. Opens when overload is reached.
- 6 **SPRING-CONTROLLED FOOT TREADLE**...up out of the way when not in use. Turns with steering handle. Decreases necessary clearance in narrow aisle operation.
- 7 **TWIN LOWERING TREADLES**...one on each side for quick operation.
- 8 **NEEDLE-TYPE LOWERING VALVE**...adjustable for perfect control.
- 9 **SHORT OVER-ALL LENGTH**...13¾" front-end length plus pallet length makes confined-area operation easy.
- 10 **TRUCK WEIGHT**...under 200 lb. (with 48" forks).
- 11 **CAPACITY**...2000 lb. Other models available in 4000 and 6000 lb.



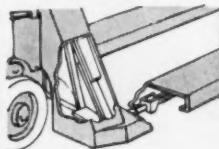
Ever see a time-saving feature like this hydraulic pump and ram package unit? Lift it out in minutes for servicing.



Exclusive feature with Barrett: "Flying Saucer" entry wheels skim into double-faced pallet...no pushing empty pallet ahead of truck.



Another Barrett exclusive: rugged, all-welded, ribbed frame to withstand forces and stresses of hard, continuous use.



Short wheel base...turns in narrow aisles.



614 DUNDEE ROAD
NORTHBROOK, ILLINOIS

BARRETT

ONE MAN DOES MORE THAN 3 OR 4... WITH A BARRETT

Circle 10 on Reader Service Card



Standing room only? **THIS TRUCK THAT PIVOTS IN 55 INCHES IS THE TICKET!**

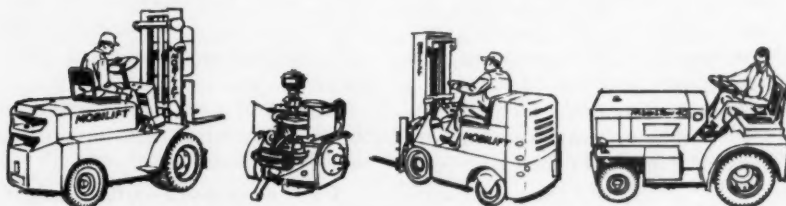
The exclusive Mobilift Stand-Up Truck sneaks in tight corners, threads 3 foot aisles . . . saves time, space, money.

What's your handling problem? Limited space? Congested aisles? Inexperienced operators? Here's a simple, *inexpensive* solution: Mobilift's exclusive engine-powered Stand-Up Lift Truck.

These trucks are as small as 33" wide and 64" long, less forks. They have zero inside turning radius. They can corner in just 52", turn around in just 9 feet, thread aisles only 35" wide. Yet they can lift 2000 to 3500 lbs. as high as 17 feet, depending on model.

A man can learn to operate a Stand-Up in one day. And he's mobile and safe. He can get on or off in a step.

The Stand-Up Truck gives you all these cost-saving advantages —plus unique Lev-R-Matic transmission and high free lift. *Yet it costs less than any other gas-operated truck.* Whether it's a sit-down or a stand-up truck you need, we can solve your handling problem inexpensively. For full information at no obligation write Minneapolis-Moline today. *Distributed by John Morrell Manufacturing Co., a subsidiary of Minneapolis-Moline Co., Hopkins, Minnesota*



MY 40 MY 60

MOLINE-BUILT ENGINES

M30 M40 M50

MT40

LIFT TRUCKS
MOBILIFT
MINNEAPOLIS-MOLINE COMPANY

Materials handling equipment • Farm machinery and tractors •
Construction machinery • Power equipment • Engines • Electronics

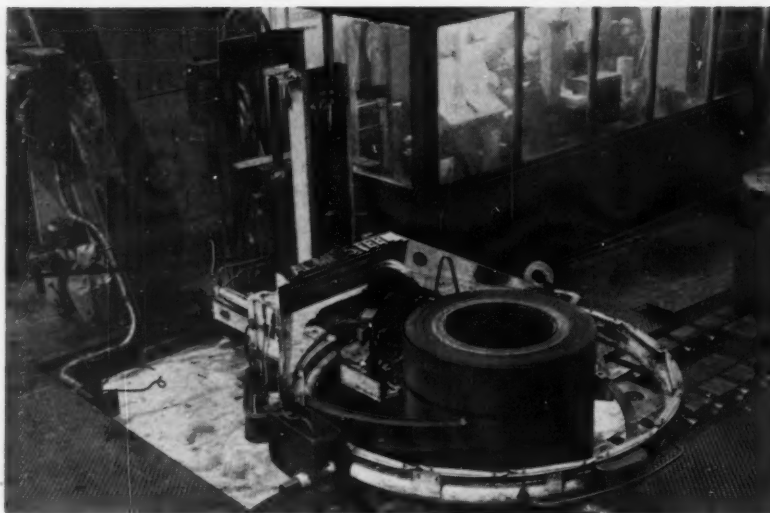
Circle 75 on Reader Service Card



COST

CUTTING IDEAS

Automatic Bander Straps Hot Coils Tightly



Three modern 44" hot strip mill down coilers make larger and more uniform coils than the two coilers they replace at the Indiana Harbor Works of Inland Steel Co., East Chicago, Ind. Strapping of the hot coils is a push-button job with a custom-made bander. Inland attributes the product improvement to the work of the new coilers and the bander.

The banding cycle includes lifting, weighing, strapping, and returning the coil to the conveyor.

The arms of the automatic bander slip steel banding around the hot coils. It makes a tighter wrap, uses less banding than the old hand banders. In the hand operation the workers stepped up to a hot coil, took a couple of bites on the strap, and jumped back from the heat that ran to 1,300 degrees F. The men worked in relays. It was considered a relief-type job in the steel industry un-

til the hot coil strapper came along.

Manufacturers expect the strapper to be in common use in 5 years, although they're custom made today. A lot of engineering goes into their planning and design. The manufacturer stations material handling engineers at the job until the machines work properly.

The bander at Inland has been built to handle coils up to 60 inches in diameter.

Coils have more uniform edges.

Inland's new down coilers have rotating mandrels that wind the red hot strip as it comes off the mill. The coils are larger and tighter and have more uniform edges than they got with old coilers.

Today, customers demand big coils to eliminate manufacturing delays. The demand for closer tolerances and uniformity across the

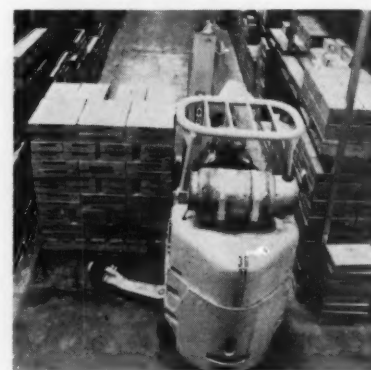
width and throughout the length of the coil is just as strong.

Gordon T. Heim, assistant superintendent, reports "Coils can now be made at 410 pounds per inch of width with a maximum coil weight of 16,000 lbs., a gain of 2,000 lbs. in coil weight over the old coilers' capacities. Coils that had uneven, telescoped ends were prone to edge damage during handling by heavy crane magnets. This often required trimming of damaged portions, resulting in lower yield."—Acme Steel Co.

Circle 250 on Reader Service Card

Fork Trucks Add 20% Warehouse Space

Four fork trucks, especially good workers in narrow aisles, helped Hansen Storage, Milwaukee, gain 13,500 feet of warehouse space. The trucks pick up and stack in aisles only 8 feet wide. Front end



mechanism pivots a full 180 degrees for left and right angle operations. They lift 2,350 pounds, and stack on tiers up to 18 feet high.

Hansen's general manager, Norbert J. Meyer says, "Material

Continued on page 26

move loads easier...



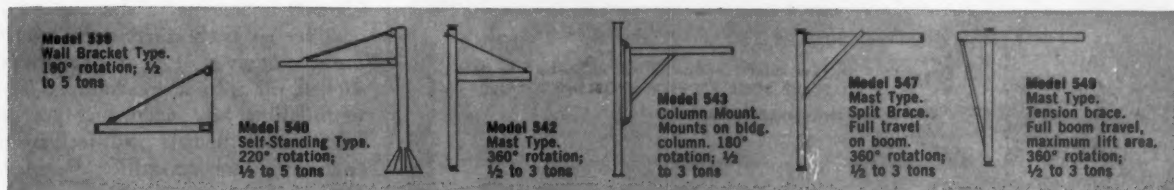
1. High carbon, hydraulically straightened Beam designed to accommodate heavy duty electric hoists.
2. Rigid box construction to insure minimum deflection.
3. Bottom roller assembly adjustable for leveling boom.
4. Heavy seamless steel column.
5. Numerous heavy steel gusset plates welded to column and base provide accurate alignment between column and base.

Free and easy boom swing is a designed-in characteristic of every Chicago Tramrail Jib Crane. For example, the 2-point suspension used in the Model 541 Jib Crane literally floats the boom through its 360° swing — makes heavy load handling a fast, easy job.

Two bottom load carrying rollers, equipped with heavy duty precision ball bearings, engage and bear on the surface of the vertical column; the top bearing is a precision radial and thrust bearing. This combination assures minimum drag and free boom rotation.

All structural and mechanical parts of Chicago Tramrail Jib Cranes are designed to withstand loads which include heavy duty electric hoists and 25% impact. Every detail of these cranes is designed and built to insure fast, efficient, and safe load handling. That's why you see more Chicago Tramrail Jib Cranes at work . . . and more being installed every day.

Chicago Tramrail Jib Cranes are made in more than 12 types; capacities to 7½ tons, spans to 22 ft., with heights and mounting details to suit your application. Write for complete Jib Crane Catalog.



**CHICAGO TRAMRAIL DIVISION
CONCO ENGINEERING WORKS, INC.**

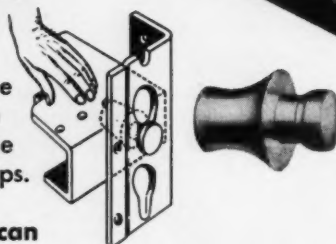
1322 SOUTH KOSTNER AVENUE • CHICAGO 23, ILLINOIS

Circle 22 on Reader Service Card

Buy *Equipto* -- Industry's choice for Quality Products



* Exclusive steel stud — a slope in the keyhole joins with the taper on the stud to form the tightest and strongest of grips. The more you load it the tighter it grips, yet shelf can be moved easily.



* No clips, nuts, bolts or tools for speedy shelf adjustment.

* 60% saved in assembly time.

* Shelves 100% adjustable from front of unit.

* Shelf can be inverted to form bin front.

* Shelves adjust on 1½" centers.

* Strongest shelf in the industry.

* Reinforcements can be added to increase capacity of shelf to 2,000 lbs.

* Four 1" x 2½" uprights allow unit to be moved without disturbing adjacent units.

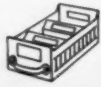
* Immediately available from stock in all sizes, either open or closed, with or without dividers, bin fronts, drawers or label holders. Fill out coupon for full details.



SHELVING



BENCHES



DRAWER UNITS



LOCKERS



EQUIPTO ROSE



STOCK CARTS



EQUIPTO ANGLE

Equipto

805 Prairie Avenue, Aurora, Illinois

- ☐ Please send me your Reference Manual No. 487. Also free booklet "HOW TO SOLVE YOUR STORAGE PROBLEMS".
- ☐ Please have layout engineer call.

NAME _____

FIRM _____

STREET _____

CITY _____

ZONE _____

STATE _____

Circle 33 on Reader Service Card

COST CUTTING IDEAS

handling determines our income and quality of operation." By reducing 12-foot aisles to 8 feet, Hansen salvaged warehouse space valued by the company at \$87,750.

Furthermore, the outrigger-equipped fork lifts enabled Hansen to standardize on a single pallet design and go two and three pallets deep off the narrowed aisles.

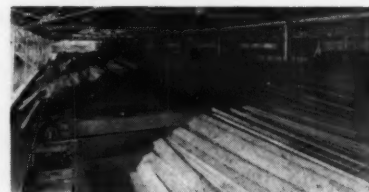
The four new model lift trucks bring Hansen's fleet to 64 that pick up, move, and stack 300,000 tons annually. This is done by standard units and trucks equipped with roll grabs, carton clamps, double masts, and other specialized accessories.—Towmotor Corp.

Circle 251 on Reader Service Card

Lumber Sorter Speeds Green Lumber Handling

Southern Pine Lumber Co., Diboll, Texas, has mechanical lumber sorters in its highly mechanized lumber plants.

The firm saves substantial amounts of manpower with the

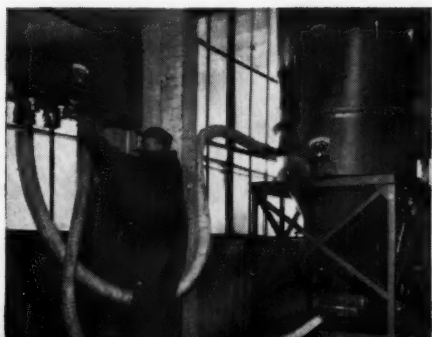


machines. For example: at one mill, 4 men now sort and process as much lumber as 16 to 20 men by hand.

The machine sorts according to thickness and length, handles 600 to 700 linear feet of board a minute. Production rates are 100,000 to 250,000 board feet a day.

A feeder man starts each board on a conveyor. It's automatically kicked off into a mechanized accumulation bay according to its length. All boards are fed from the same point alongside the sorter. Lumber in most mills is kiln dried, and must be carefully stacked according to length and thickness for

Continued on page 28

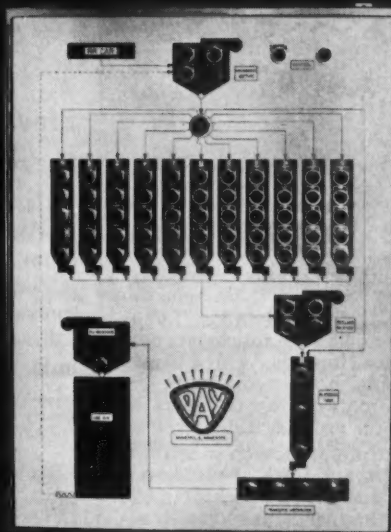
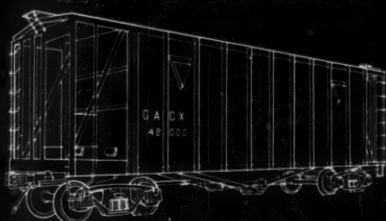


High density pneumatic conveying system for unloading polyethylene pellets from railcar. After piping connections are made, dual-purpose DAY "RJ" receiver, shown right in photo, "pulls" product from railcar and "pushes" it to storage tanks or manufacturing process.

PUSH A BUTTON



UNLOAD A RAILCAR



DAY Control panel — your most efficient link between railcar and plant, storage or process.

Save manpower, time and money unloading railcars with DAY *air-line* pneumatic conveying systems. They provide a sanitary, low cost way to unload, transport in-plant, mix, dry, cool or load any type of dry material. DAY *air-line* pneumatic conveying systems are pneumatically conveying close to 200 different products. Take advantage of this DAY experience. Discuss your pneumatic conveying and plant storage equipment requirements with DAY. Only DAY offers a complete service, including: *engineering, fabricating and installation of everything* (including bulk storage tanks) needed for efficient, economical systems. **FREE** bulletin describes all types of pneumatic conveying systems. It tells how you can make substantial savings 9 ways and improve plant efficiency 6 ways with DAY *air-line* pneumatic conveying systems.



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The DAY Company

874 Third Ave. N.E., Minneapolis 13, Minn.

Please:

☐ Send Bulletin M-588 (Pneumatic Conveying Systems)

In CANADA

The DAY Company of Canada, Ltd.

15 Brydon Dr., Rexdale (Toronto) Ontario

☐ Send Bulletin 574 (Tanks for Bulk Storage)
☐ Have DAY Representative Contact Me

NAME _____

COMPANY NAME _____

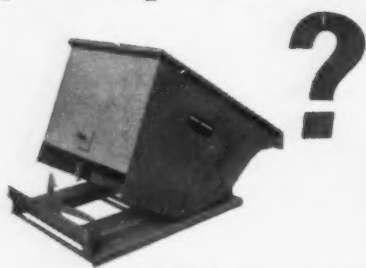
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CITY _____

STATE _____

Circle 25 on Reader Service Card

How much will a 50% cut in bulk handling costs add to your profits



Probably a lot, if your plant is at all like the thousands now using Roura Hoppers. With a Roura self-dumping hopper on your lift truck one man can do the work of two . . . and use less time doing it.

Roura Hoppers attach in seconds to any lift truck (fork or platform). They can't slip off. Operator picks up loaded hopper, transports it, releases the latch—and the hopper automatically dumps itself, rights itself, locks itself. The Roura Way adds to your profits because it's the fastest, lowest cost method of handling bulk materials and small parts—hot or cold, wet or dry.

SPECIFICATIONS: Eight sizes, $\frac{1}{8}$ to 4-yard capacities. Construction: $\frac{3}{16}$ " steel plate with continuous arc-welded seams. Heavier plate, stainless, aluminum, galvanized available. Mounted on live skids or choice of wheels. Standard models shipped from stock.



DUMPS ITSELF RIGHTS ITSELF LOCKS ITSELF

ROURA Self-Dumping HOPPER

WANT MORE DETAILS? Just clip this coupon to your letterhead and mail to
ROURA IRON WORKS, INC.
1411 Woodland Ave., Detroit 11, Michigan

Circle 100 on Reader Service Card

COST CUTTING IDEAS

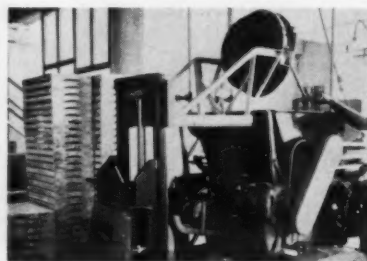
the drying operation. The sorter is effective for processing the lumber between the sawmill and dry kilns. All installations to date are in covered buildings, which provide important protection to lumber while in process.—*Moore Dry Kiln Co.*

Circle 252 on Reader Service Card

Elevating Truck Increases Production

Handling costs were cut and production increased when the Blum Candy Co. of San Francisco started using a portable elevating truck.

Kettles of hot batches weigh up to 200 pounds. Three men used to



move them from a fire mixer to a depositor. The moving was slow and costly. Blum bought an elevating truck and a special slipon attachment to pick up the kettle.

Now one man picks up the kettle, transports it to the depositor, raises the load and dumps the contents by cranking the attachment. The slipon attachment is easily removed. With it off, the truck transports and stocks cartons. "A real time and labor saver," says Blum.—*American Pulley Co.*

Circle 253 on Reader Service Card

Case Sealer Handles Diversified Line

Pepperidge Farms, Inc. bakery at Dowingtown, Pa., uses a wide variety of cartons to ship its diversified line of bread, rolls, past-

Continued on page 31

8 REASONS A Marietta SILO SYSTEM CUTS BULK STORAGE COSTS...

- 1 Built for safer, better bulk materials protection.
- 2 Engineered to operate with any materials handling system.
- 3 Designed to meet precise requirements.
- 4 Space saver that consolidates materials, minimizes space needs.
- 5 12 types of gravity discharge systems to meet any need.
- 6 Eliminates ground storage losses.
- 7 Cuts handling costs.
- 8 Eliminates expensive bagging.

For complete information on how a Marietta Industrial Silo System can be engineered to meet your exact requirements and help you to cut costs, speed handling and protect materials, write for our Industrial Storage Systems Catalog.



Circle 79 on Reader Service Card
MATERIAL HANDLING ENGINEERING

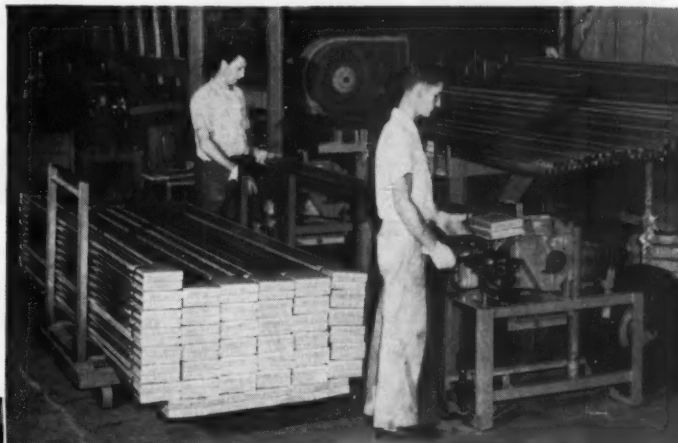
3 ways to get maximum protection with minimum packaging



ENDS ▶

A single piece of corrugated board and steel strapping at each end of these 10-foot lengths of tubing make a neat, square package that places effective protection where it is needed, takes little material, and is easy to handle, stack, store and ship.

Two men, each with a Signode M2 power strapping machine, stack, cap and strap 270 packages per day, as against 130 packages per day with hand strapping tools.



◀ EDGES

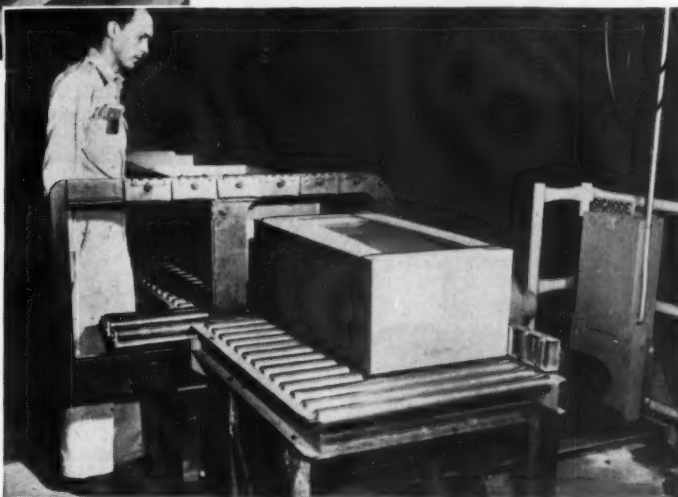
Long sheets of laminated plastic are paper wrapped, then edges are enclosed in strips of corrugated. Steel strapping is automatically applied at just the right tension to make a sturdy unit package. Savings in packaging costs are substantial, protection is practically perfect.

Operatorless strapping with a Signode M20 power strapping machine. Conveyor is powerized. Strap placement is controlled by a conductive ink mark on the package.

4 SIDES ▶

Metal shelving and components are strapped in these containers that are open top and bottom. They are typically 3' long, 1' high, and from 9" to 36" wide. The same machine straps bundles of angles or posts that are only 3" to 4" square. Production is up almost four times, package unit cost is down, protection excellent.

One man and this foot-pedal-operated power strapping machine strap over 1100 containers a day. The machine has an adjustable strap chute to assure maximum strapping speed.



■ These three ways to save suggest what is accomplished when the strength of quality steel strapping is used with skill and imagination. Write for free Minimum Packaging Idea Kit.



First in steel strapping

SIGNODE

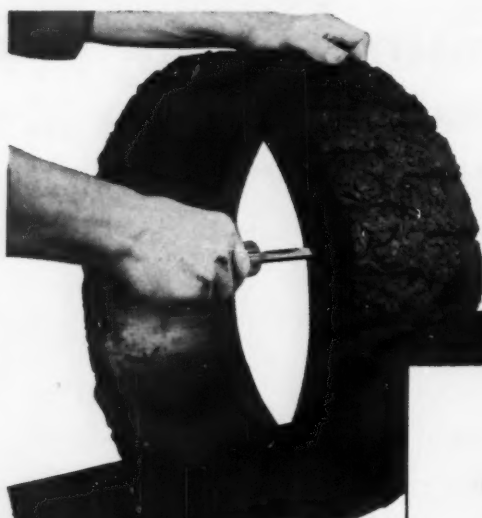
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Circle 107 on Reader Service Card



**HERE'S
PROOF
OF SUPERIOR
PERFORMANCE!**

**Problem: Premature
rim separation**

**Solution: Monarch solids
made by new
* Monolok Process**

CASE #27

**CEMENT
BLOCK
PLANT**

Problem: Standard solids and special urethane tires were failing in up to three months time due to rim separation.

Condition: Tires were run on edges in an autoclave under excessive heat and usually in an overloaded condition.

Test Results: Monolok bonded tires were still in service after five months and are still running.

CASE #44

**STEVEDORING
COMPANY**

Problem: Tires were separating from rim after six months use.

Condition: Standard solids were exposed to severe punishment by driving trucks at full speed over railroad spurs and dock board corners.

Test Results: Monolok treated tires lasted up to nine months — 50% increased life.

CASE #56

**MACHINE
SHOP**

Problem: Tires were separating from rim after two to four months use.

Condition: Tires were exposed to floors littered with steel chips and shavings.

Test Results: Tires although riddled with steel ran eight to twelve months before being replaced.

*** MONOLOK**

is Monarch's trade-name for a revolutionary new process for permanently bonding rubber to metal.



**THE
MONARCH
RUBBER COMPANY**

210 Lincoln Park
Hartville, Ohio

- 7-225 General Motors Bldg., Detroit, Mich.
- 4140 West Fullerton, Chicago 39, Ill.
- Western Warehouse, Reno, Nevada

If metal scrap, chemicals or excessive heat are the cause of premature rim separation in your plant let these facts speak for themselves. Now you can reduce replacement costs, truck downtime and driving hazards. Monarch engineers have solved the problem of separation by combining an improved natural rubber stock . . . compound T-5100 . . . with an advanced chemical bonding operation. Insist on Monarch MONOLOK.

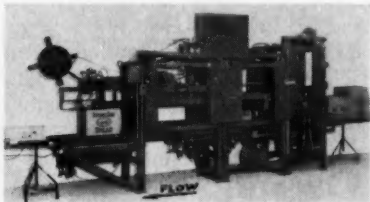
Circle 74 on Reader Service Card

10000-MR

MATERIAL HANDLING ENGINEERING

COST CUTTING IDEAS

ries. Pepperidge Farms chose a case sealer taper that could handle mixed sizes quickly, efficiently, and economically. The case sealer taper automatically adjusts to any size



case within its range, closes the top flaps, and seals the top and bottom with gummed tape.

Pepperidge Farms mentions these advantages for the tape sealer:

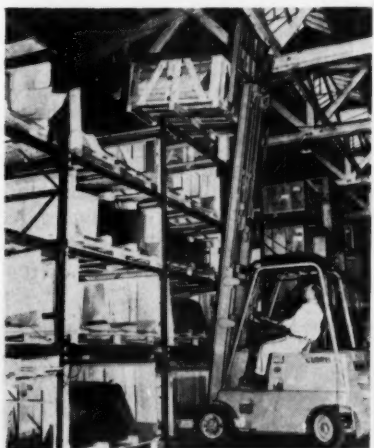
- Prevents shipping delays
- Seals cartons neatly
- Saves labor, tape
- Customers like the cartons because they open easily.

—General Corrugated Machinery Co., Inc.

Circle 254 on Reader Service Card

Fork Truck Increases Storage 22 Percent

A fork truck equipped with a triple stage upright enables Tyre Bros. Glass Company, Los Angeles,



to gain 22 percent more storage space in its warehouse.

The company distributes flat and plate glass, safety glass, and automobile windshields. It also makes

20,000 sq. ft. of mirrors a day. Tyre found it needed more storage space. Breakage losses kept mounting, due to overcrowding of stock and manual handling.

The company hired industrial consultants who revised the entire storage layout. The consultants got them to narrow the aisles, install ceiling high racks, and buy fork trucks capable of stacking to 15 feet.

The lift truck stacks to 180 inches in the 108-inch wide aisles. The

truck has 4,000-lb.-capacity, power steering, and a power-shifted transmission that inches precisely, extremely handy when handling fragile products in close quarters.—Clark Equipment Co.

Circle 255 on Reader Service Card

Self-Dumping Hoppers Simplify Dust Disposal

Norton Company's Plant 8 in Worcester, Mass. easily disposes of

Continued on page 32

**10-DAY
FREE TRIAL
OFFER!**

**SAVE MUSCLE...
SAVE MONEY!**

LaHer 'LECTRIC LOADER LIFT

A MUST FOR A 1000 JOBS

LOADING AND UNLOADING—MOVE IT ANY WHERE—NO HOSE OR ELECTRIC CORD ATTACHED. YOU'VE BEEN LOOKING FOR A LIFT THAT IS EASIER TO MANEUVER—that is built so operator can get hold of it—that is lighter in weight and stronger in construction—that handles so easily you will never let go of it once you try it in your plant!

More capacity—2 powerful batteries instead of 1—highest quality battery charger built in—motor, pump, tank, valve, etc. ALL-IN-ONE substantial unit...the finest, most dependable made in America! You'll find competitive equipment clumsy and awkward to handle by comparison to the LAHER Loader Lift!

ORDER NOW—use for 10 full days and, if you aren't 100% sold on the muscle and money saved, you may return it freight prepaid.

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St., San Francisco • 541 So. State St.,
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Sacramento



Circle 61 on Reader Service Card

what do you mean "WIREBOUND"?

The toughest, hardest-working, always-on-the-job container, that's what we mean. SUPERSTRONG WIREBOUND, of course. On the go everywhere. Protecting all kinds of products. A veritable bulldog for every packing and shipping requirement. Your call will bring a Superstrong Wirebound engineer with all the details.




WIREBOUND BOXES & CRATES



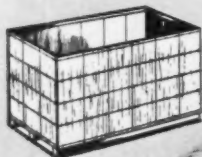
SUPERSTRONG WIREBOUND PALLET BOXES for economical, long-lasting, lightweight materials handling and storage.

WIREBOUND BOX DIVISION

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Circle 105 on Reader Service Card

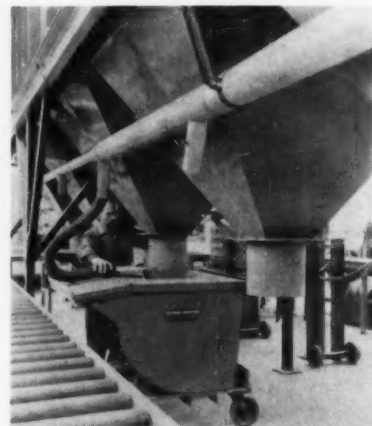
COST CUTTING IDEAS

dust and fines with self-dumping hoppers.

The dust comes while they make grinding wheels. Vacuum systems collect the dust, feed it to overhead collector bins at central points. Bins must be emptied daily.

Norton's plant engineers bought six specially fitted self-dumping hoppers of ½-cu.-yd. capacity. They're caster-mounted, position easily under the bins.

A hinged, dust-tight cover fits over the hopper. The cover has a circular opening that fits the discharge spout of the collector bin. A U-shaped welded collar fits around the circular opening. When dust empties into the hoppers, a portable vacuum line, held at the



open end of the collar picks up dust that rises.

Fork lift trucks take the filled hoppers to a loading dock. There, the hoppers are emptied by tripping a release lever on the back of the units. They tilt forward to discharge material, then rock back to upright position.—Roura Iron Works, Inc.

Circle 256 on Reader Service Card

Aluminum Doors Go To Market Fast

The Moloney Co. speeds its combination doors to market, unmarred, in stapled and strapped corrugated cartons, with the help

Continued on page 34

MATERIAL HANDLING ENGINEERING



2 Michigans, special equipment, reduce operating costs for Cargill, Inc.

Simply taking advantage of a manufacturer's optional equipment has enabled Cargill, Inc. to adapt two Michigan Tractor Shovels to material handling jobs that otherwise would require larger, more expensive machines.

Required—compact machine with extra high dump

At Cargill's Omaha, Nebr. warehousing subsidiary, Cargo Carrier Inc, material handling is almost fully automatic—conveyors carry bulk fertilizer and rock salt from hoppers to bin, bag and box car. But in two important areas, material handling is assigned to Tractor Shovels—transporting materials from bins to hopper...and truck-loading out of bins. Both jobs pose special problems.

For example, bulk truck-loading requires a machine that can maneuver in cramped bins, around close-spaced support posts, through a low clearance door . . . and still dump into huge transport trucks. A compact 77 hp Michigan Model 75A proved perfect for bin operations, and its 1¼ yd bucket provided the required capacity. But dumping height (9'7") was insufficient to clear the 10'2" high sides of 20 ton trucks. The solution: optional high-lift arms which gave 2'2" more clearance than the rig's standard arms.

Required—small machine with extra big capacity

The other assignment—moving fertilizer from bins to hopper—calls for a much more compact Tractor Shovel . . . one that can maneuver through aisles and bin openings *only 6 ft wide and 6 ft high*. Here the Model 12B (smallest of the nine-model Michigan line) proved the perfect size. But its standard 16 cu ft bucket was too small to transport enough fertilizer to meet Cargill's production needs. One obvious solution, add another machine, was not practical due to cramped quarters and added costs.

The answer: fit the 44 hp Model 12B with a one yard bucket (one of six bucket options on this machine). After all,

fertilizer is relatively light weight—about 60 lbs/cu ft—a yard would weigh well under the Michigan's 2900 lb capacity. Nor would the extra 12" bucket width (62" total) pose any maneuverability problem.

Production high . . . availability excellent

Cargill reports complete success in both applications! The Model 75A loads 20 ton trucks in less than 10 minutes, 14 passes, 100 ft one-way trips bin to truck. The Model 12B feeds hoppers for both bagging and railway box car loading, often works 24 hours a day, handling granulated fertilizer.

"We consider high output plus excellent availability Michigan's biggest benefits," summarizes Plant Supt Merle Bruce. "A fertilizer plant like ours offers difficult working conditions for the Michigans—dust, cramped quarters, round-the-clock duty—but in two years neither Michigan has given us a bit of trouble . . . or held up production."

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK
EQUIPMENT

2445 Pipestone Road
Benton Harbor 44, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario



COST CUTTING IDEAS

of a home-built carton-holding frame.

The cartons are made of 150-lb.-test C-flute corrugated board. They come to the plant cut, sized, and scored. The ends overlap, making a form-fitting rectangular container.

Using a specially-made wooden frame, the operator first folds the bottom panel at scored points and fits it in the frame. He places the aluminum door in this panel, then folds the flap ends of the carton on both ends and staples them with an air-driven autoclench stapler. He uses four staples on each end.

Next he folds the top panel and places it over the door and bottom panel. Again, he folds the end and staples them. Completing the

package, a single band of steel strapping secures the carton for immediate shipment.

Fast marketing. Using this packaging set-up, they're able to



ship up to 85 doors a day. The cartons range from 30 x 70 inches to 36 x 84 inches, to accommodate various sizes of doors.

Moloney says this set-up reduces fatigue, as the stapler weighs only half as much as the pneumatic tool used before.—*Bostitch, Inc.*

Circle 257 on Reader Service Card

CUT LOAD HANDLING TIME

AS MUCH AS 87% WITH 

RELAE* Equipment





NEW POWER and SPEED for PALLET HANDLING

• ON OR OFF TRAILERS • IN PLANT • ON DOCKS • IN WAREHOUSE

Looking for a way to cut costs? Just as efficient MATERIAL handling cuts production costs, efficient PRODUCT handling can slash the cost of distribution. The RELAE System is product handling perfected through a quarter century's experience in moving merchandise quickly and at lowest cost. TRAVL-TRAM (illustrated above†) is but one exclusive feature of the RELAE System. Push-button controlled power moves one, two or more pallet-loads onto or off of trailer quickly and easily; load-selective feature is another exclusive!

OTHER RELAE ELEMENTS include: Pallets with removable legs and wheels, frozen food and non-insulated cargo-tainers, powered or manual Spotters, RELAE-Lift for ground level loading-unloading and RELAE Chutes and Trailer Guide-Ways.

With the RELAE System, Pallet loads can be assembled in the plant, loaded for transport and unloaded at the destination . . . cutting overall distribution costs as much as 50%.

RELAE Equipment adapts to your present handling methods, to new or in-use trailers, offers many exclusive features which make it quickly pay for itself in handling and time savings alone! For complete details, write today for illustrated bulletin.

KAPPEN

SALES COMPANY • 1238-G Enquirer Building • Cincinnati 2, Ohio

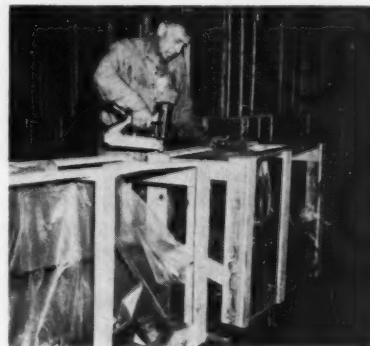
Circle 131 on Reader Service Card

* T.M.-U.S. & For. Pats., Pats. Pend.

Staple Nailing Cuts Crating Costs

Labor costs for crating dropped 40 percent and production went up 45 percent at Lincoln Electric Co., Cleveland, when pneumatic staple nailing replaced hand nailing.

Lincoln Electric crates arcwelders, generators, and similar equipment, weighing from 400 to 2,400



pounds. They need heavy, sturdy crates. They use a semi-automatic air-operated gun that shoots 100 staples a minute. It's magnesium, weighs only 5 pounds.

"The nailer drives staples from $\frac{3}{8}$ inch to $1\frac{1}{2}$ inches long," they say. "Tests show the staple breaks before it pulls out. Its holding

Continued on page 39

MATERIAL HANDLING ENGINEERING

EXIDE POWER PACKAGE

Exide Industrial Marketing Division, The Electric Storage Battery Company, Philadelphia 20, Pa. 



85 AMP-HR—ONLY 22⁵/₈ in. HIGH!

Here's the new high in battery capacity for electric industrial trucks—the Exide-Ironclad TSC Battery. It is available right now and it will fit in the battery compartments of your present trucks without modification. It conforms to the design thinking for future trucks as expressed by truck manufacturers.

This battery offers a capacity of 85 amp-hr per positive plate—increased from the previous highest available capacity of 80 amp-hr in the Exide-Ironclad TGS—and still with over-all height of 22⁵/₈ in. The

length and width dimensions of the battery are also unchanged. Therefore the new battery occupies the same space as present batteries.

A unique feature of the Exide-Ironclad Battery is the tubular construction of the positive plates. With the square-shaped tube, introduced over a year ago in the TGS Battery, Exide made it possible to get higher capacity from each positive plate through greater area in contact with the electrolyte.

Now, in the TSC Battery, Exide introduces woven mesh tubing, still square shaped, but with higher porosity for easier access of electrolyte. This new tubing is able to hold more active material, which, in addition to the higher porosity, results in higher capacity than ever before. The tubing is of a special nonoxidizing material of proven long life in extensive laboratory tests and field applications.

This increase in battery capacity has been achieved without increasing the height of the battery. Thus you can step up the work capacity of your present trucks without the extra expense of modifying the battery compartments. The Exide-Ironclad TSC is still only 22⁵/₈ in. high. Likewise its specific gravity is still only 1.275.

Circle 31 on Reader Service Card

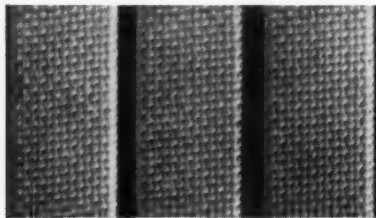
Hence battery life potential remains high.

With the introduction of the Exide-Ironclad TSC, Exide now makes it possible for you to match your particular battery power requirements more closely than ever. If you are ready to buy a new truck or new battery now, talk with your Exide representative about how you can get the maximum power for your dollar.

Only Exide offers so broad a range of battery types: Exide-Ironclad, Exide-Powerclad premium flat plate, and Exide Nickel-iron alkaline (invented by Thomas A. Edison). Exide chargers are available in both motor-generator and silicon rectifier types, in sizes to cover all needs. Exide service men are coast to coast, all factory trained in both batteries and chargers.

Make sure you get maximum economy in your battery power. Write Exide Industrial Marketing Division, The Electric Storage Battery Company, Philadelphia 20, Pa.

Exide®



New tubing boosts battery capacity

Side view of tubing magnified twice size shows the fine mesh with thousands of pores for easy flow of electrolyte. Holds active material firmly against loss.

When the giants fall...

"At 6:45 a.m. tomorrow, we'll go to work cutting this stand. We'll load the logs, charge the mill, work the drying yards, load the freight cars and ships. We'll handle this redwood spruce 23 times—in mud, over rough ground, in all kinds of weather.

"When you're in the business of moving materials—whether it's lumber, steel or any other—the equipment makes the difference. That's why we demand fork lifts that will stand up. That's why we buy Clark."



Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek, Michigan



*For full details
see your local Clark Dealer,
or Circle 77 on reader service card*

Another first from Standard Conveyor

New continuous vertical conveyor revolutionizes floor-to-floor movement



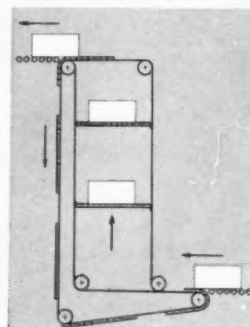
Escaveyor self-loads, self-unloads, lifts products straight up or down without tipping or jarring. Provides smooth up, down, or reversible service.*

How Escaveyor speeds production. Here is the answer to your big need for a fast, continuous flow of commodities from floor to floor. Escaveyor moves commodities at a steady rate of 8 to 10 loads per minute.

How Escaveyor saves space. Escaveyor lifts packaged or unit commodities rapidly from floor to floor with the continuity of a belt conveyor. Yet your product always rides level. And look at the huge saving in space! It takes even less floor space than a conventional monostrand or straight-lift conveyor! Escaveyor's size is tailored to fit your package.

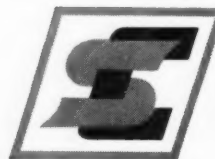
How Escaveyor costs less. Escaveyor actually costs less to purchase and install than practically any other type of lift.

It requires less manpower because no manual loading or unloading is required. You also save many square feet of valuable floor space.



Free brochure. Send for free Escaveyor brochure! It tells how Escaveyor works, and how it can solve vertical material handling problems for you! Get your copy from Standard Conveyor Company, Dept. 302-J, Second St., North St. Paul 9, Minnesota, or from your nearby Standard Conveyor sales representative.

*patent pending



Standard Conveyor

Sales and Service in over 40 Cities
Consult your Yellow Pages

Circle 111 on Reader Service Card

MATERIAL HANDLING ENGINEERING

COST CUTTING IDEAS

power is greater than the tensile strength of the wire."

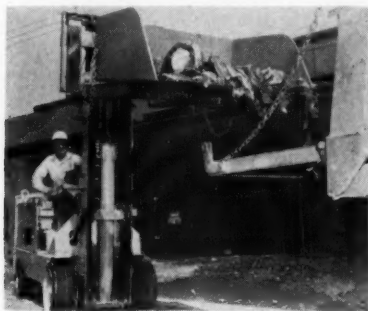
The workers get a lot less tired, and Lincoln finds the gun rugged enough for really heavy jobs. The air supply can be taken from a plant compressed air system or a portable compressor. Only about 60 p.s.i. is needed for efficient operation.—Fastener Corp.

Circle 258 on Reader Service Card

Automatic Dump Bin Speeds Clean-up

Equipping fork lift trucks with automatic dump bins for handling dirt and trash cuts unloading time and increases clean-up efficiency at Armco Steel Corporation, Baltimore Works. The fork truck attachment was adopted through the employee suggestion program.

Bolts, run through flanges on both sides of the bin, pin it to a metal skid. The bin pivots on these



bolts. The bin-skid assembly attaches easily to the fork lift truck by running the lift prongs through channels in the skid.

An anchor chain secures the bin to the truck body. Once anchored, it can pivot on the flanges over the front edge of the skid. The driver controls the tripping from the cab with a cord that attaches to the rear of the bin. Chains keep the bin from tipping too far.

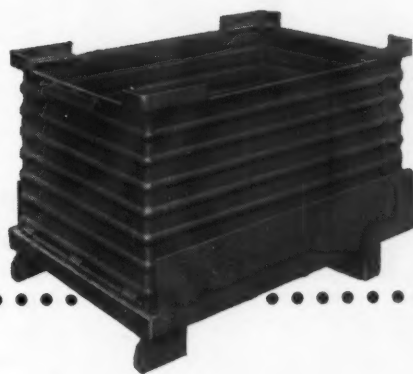
With the forks at ground level, the truck drives into a pile of rubbish, scoops it easily into the bin. Then the truck drives to the tail gate or side boards of a standard

Continued on page 40

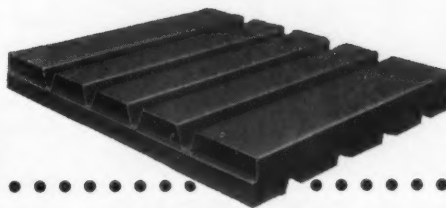
For strength, efficiency, economy...

Union Metal

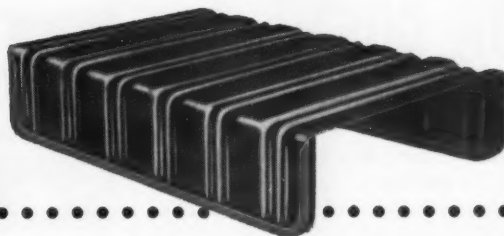
boxes



pallets



skids

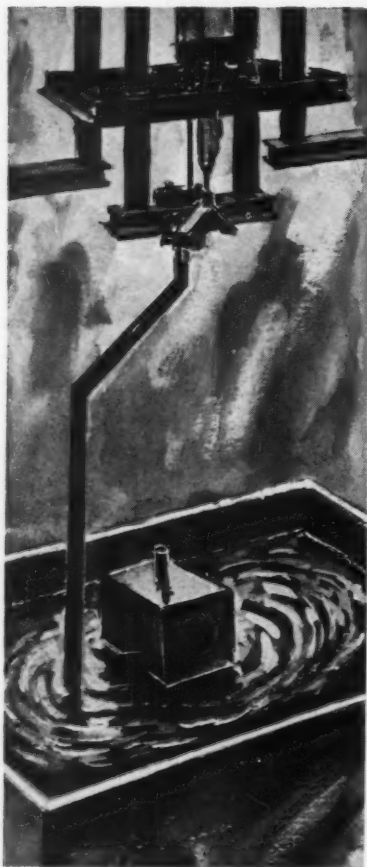


Union Metal material handling equipment is found throughout industry: increasing production line efficiency, keeping floor areas clear, making maximum use of every cubic foot of space. For detailed information on the wide range of available designs and sizes, write The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

Material Handling Equipment

Circle 123 on Reader Service Card



GET THE DROP ON COSTS....

The unique vertical drop section in Rapistan Power-and-Free overhead trolley conveyor gives a new answer to old problems.

It lowers parts to assembly height from overhead storage. It serves processing and finishing stations.

It saves floor and tank space, because a dip tank need be only big enough to contain the part, regardless of dip cycle length.

It saves space wherever changes in elevation are required.

For information on the vertical drop section and other unique features of Rapistan Power-and-Free conveyors, write to Rapistan-Keystone, Inc., 509 Rapistan Building, Grand Rapids, Mich. Ask for Bulletin 2365.

Rapistan®

OVERHEAD CONVEYORS
Circle 93 on Reader Service Card

COST CUTTING IDEAS

dump trucks. The driver pulls the dump cord which trips a latch and tips the bin, dumping the rubbish load. To pivot the bin back on the forks, the driver lowers the skid until the bin-catch engages.—Armco Steel Corp.

Circle 259 on Reader Service Card

Collapsible Containers Ease Transportation

The illustration shows 10 tons of rubber being uncrated at a Jersey City, N.J. pier from the S.S. *President Taft*, in a recent experimental shipment of latex rubber drums.

They are collapsible Sealdrums, used in the test shipment by United States Rubber Co. from its plantations in Malaya.

The ship stored the filled containers in the hold, like giant eggs in a carton. Each Sealdrum holds 500 gallons. Most of this shipment was a general purpose latex, for adhesives, nonskid carpet backing, household gloves and toys.



Ordinarily they ship latex in disposable steel drums or in 150,000-gallon tanks found only on special vessels. The rubber drums better suit variable shipment schedules. They can be shipped on almost any type of vessel. Other advantages: easy to clean, keep out air (bad for latex), take little space when empty.—United States Rubber Co.

Circle 260 on Reader Service Card

Side-Loading Truck Saves \$10,000 A Year

Savings of 3,300 man hours is the annual score of a side-loading

fork truck at the highly automated Richards-Wilcox Manufacturing Co., Aurora, Ill.

"At this rate of savings," says the company, "the truck will pay for itself in two years. It also releases two men for other jobs."



Richards-Wilcox runs the truck an average of only 1½ hours per 8-hour shift. They use the truck only inside the plant, and because it's electrically powered, there has been no air pollution, no need for special ventilation.

A major benefit of the 60-inch wide sideloader: its maneuverability in the 6-foot, 6-inch aisles. The company says "This is as much space as we can economically apportion for moving vehicles in the warehouse. Since this truck's forks operate from the side rather than the front, it's ideally suited to this limited operating area. And because the truck is long and narrow, it can move every size of board or panel. Our lumber ranges from 12 to 30 feet long, and our plywood panels measure 4 by 8.

"The 4,000-lb. truck operates well within its safety range, moves loads weighing up to 3,800 lb. around our recently completed warehouse. We built it when we converted the old warehouse into manufacturing. The new warehouse is limited to 13,000 square feet by railroad tracks.

Full use of ceiling space. "We store 500,000 board feet of 10-percent-kiln-dry lumber and about 225,000 board feet of plywood and hard board. We need every square foot of space to keep up our inventory. And we use almost the

Continued on page 44

MATERIAL HANDLING ENGINEERING

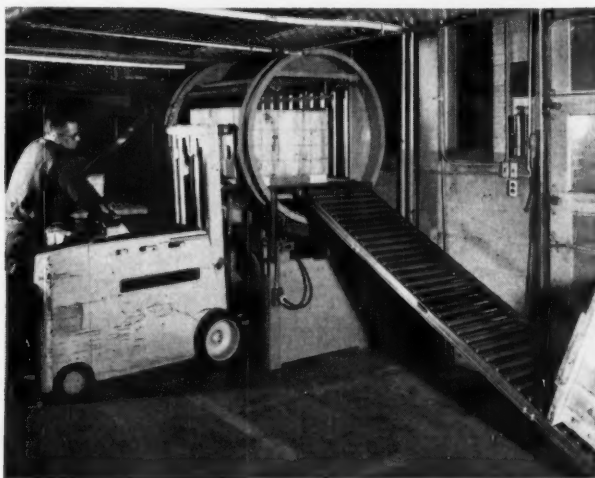


HOW "TECHNICS" PLANNING PAYS "COMPOUND SAVINGS"

In any business, whether yours is a manufacturing plant, a wholesale warehouse, a retail or chain operation, or a service industry, materials handling is the one function that is closely related to all the other management arts.

Because of its influence on so many other departments and functions, it can be utilized as a management tool, to coordinate methods improvements throughout an organization, directed toward the common goal of reduced operating costs and increased profits.

This principle is the basis of Rapistan's proven "Technics" approach to cost reduction. It starts with the materials handling system, in all its aspects; then, extends the benefits of improved materials flow to produce subsidiary benefits in other areas of management as well.



New containerization of these conveyor wheels, specified by Purchasing, coupled with a new automatic unloading device designed by Plant Engineering, speeded truck unloading to 1/12th the former time. Wire-bound crates are designed for re-use as finished goods shipping containers for a further saving.

Thorough Planning—The Key

Rapistan's "Technics" concept of materials handling goes an important step beyond solving the problems of movement, transfer, storage and flow control. It recognizes the inter-relationships of the flow system with other management functions—purchasing, industrial engineering, product design, manufacturing, quality control—even clerical procedures.

By thorough planning, to augment and capitalize on improvements in the flow system through all related management activities, a "Technics" plan gives management maximum return on its investment.

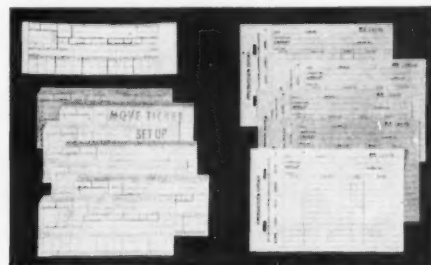
A successful Technics program requires skillful coordination, under centralized and authoritative direction. Only top management can provide this. But, by the nature of his specialization, the materials

Circle 92 on Reader Service Card

handling engineer can contribute much to such a program. Your Rapistan sales engineer can offer new ideas and techniques of materials handling. And, his knowledge of "Technics" principles can help you compound the savings in many related phases of your total operation.

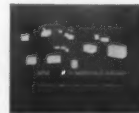


Plant engineers who designed this transfer mechanism to match Rapistan live storage Flow Racks helped make the entire system more efficient and versatile. Such contributions illustrate relationship between plant functions and materials handling, developed through Technics planning.



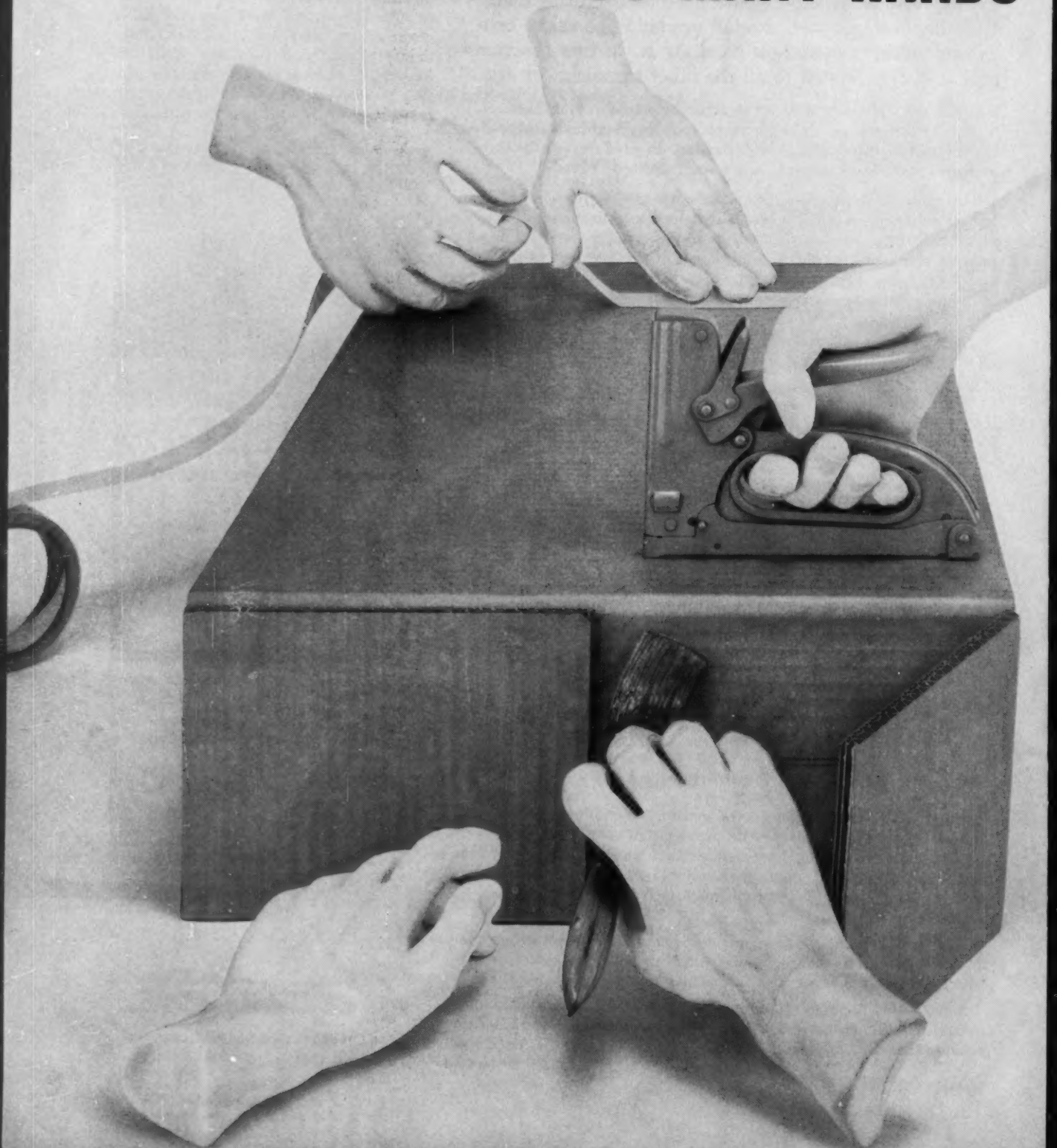
IBM data processing is coordinated with the flow system in this successful Technics program. These cards trigger movement of raw materials and work in process into and out of storage, and over the conveyor system between manufacturing operations.

This new brochure illustrates "Technics" planning at work in the management of materials, solving problems of inventory control, order selection and similar warehousing functions for manufacturing and distributing firms. For your copy write to The RAPIDS-STANDARD CO., Inc., 508 Rapistan Bldg., Grand Rapids 2, Michigan.



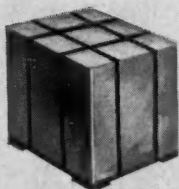
Rapistan®
CONVEYING EQUIPMENT

TYING UP TOO MANY HANDS



IN PACKAGING?

Acme Steel mechanized strapping beats any other method hands down!



Too many hands too often strangle the efficiency of a packaging operation. New Acme Steel innovations in mechanized strapping convert wasted motion into concentrated productivity—at the press of a button. By uniformly tensioning, sealing and cutting your steel strapping automatically, Acme Steel Strapping Machines put your operation on a high volume, production line basis. You multiply packaging output without adding a man. In fact, Acme Steel mechanized methods usually *free* busy hands for other assignments.

The secret behind the industry-wide success of Acme Steel mechanized equipment is not only its speed, but remarkable flexibility. Basic machines can be easily adapted to meet virtually any strapping requirement. The result is double savings: 1) You save considerable time and manpower; 2) You save on cost of the equipment itself.

Have your local Acme Idea Man explain exactly how mechanized strapping can most profitably serve you—and pay for itself within months. Or, write for complete details.



IDEA LEADER IN

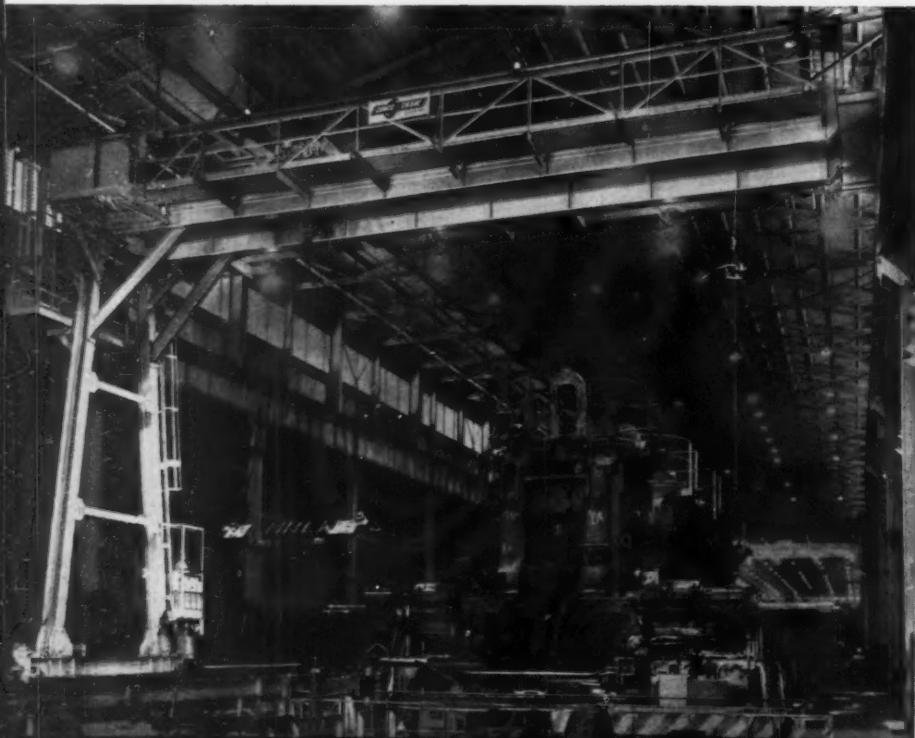
STRAPPING - STITCHING - FRAMING

Acme Steel Company, Dept. MECP-91, 135th St. & Perry Ave., Chicago 27, Ill.



CONCO OVERHEAD TRAVELING CRANES

in capacities to 150 tons



Conco Semi-Gantry Crane
custom-engineered for service
in a Chicago area steel mill



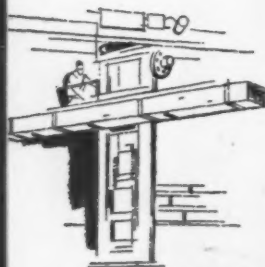
Write for Crane Specifications Tablet containing five sets of general service crane specification data and forms.

For information on Conco Cranes, Hoists and Trolleys Request Bulletin 50008

Material Handling Division
CONCO ENGINEERING WORKS, INC.
Mendota, Illinois

AFFILIATES:

SPARTAN TOOL DIVISION, Powered Sewer Cleaning Equipment
FIELD CONTROL DIVISION, Barometric Draft Controls
CONCO BUILDING PRODUCTS, INC., Brick, Tile, Stone.



CHICAGO TRAMRAIL, manufacturer of "Trak-Rak" Stacker Cranes, Monorail Systems, and "Fas-Lok" Storage Racks at 1330 S. Kostner Ave., Chicago, is now a DIVISION OF CONCO ENGINEERING WORKS, INC.

Circle 19 on Reader Service Card

← Circle 1 for more information
on Acme Steel Co.

COST CUTTING IDEAS

maximum 13-foot, 6-inch lift of the forks. That's coming pretty close to full use of the space, especially when you consider that we have a 14-foot ceiling.

Richards-Wilcox now has no manual handling whatever, and enjoys a more orderly warehouse. Manual stacking (less precise) required a complex method of stock rotation. Inventory is no longer complicated. Stock is readily accessible.

They charge the battery twice a week during the night, so service is never interrupted.—Baker Industrial Trucks.

Circle 261 on Reader Service Card

Utility Vehicles Speed Car Maintenance

Pacific Fruit Express, which services more than 27,500 refrigerator cars in 5 repair yards across the nation, cuts maintenance costs and gets more work done by moving men and materials around the yards with a fleet of utility vehicles. Pacific uses gasoline and electric powered models.

For maintenance, Pacific Fruit depends on gasoline-powered Trucksters. They carry an 800-lb.



payload of equipment and tools, help a maintenance man quickly move from one place to another where repair work is needed. The

Continued on page 46

At long production lines or individual work stations...



R-W "Zig-Zag"

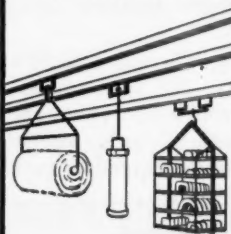
CONTINUOUS POWER

CONVEYORS
will save you
TIME, LABOR
and **DOLLARS!**

From electronic devices and TV Tubes that require "gentle" handling to wearing apparel, foods and rugged industrial products—an R-W "Zig-Zag" Conveyor offers a time and cost saving overhead materials handling system. Equally adaptable for small, special purpose conveyors or huge "door-to-door" plant-wide systems that convey components and products from receiving, through all production processes, finishing operations and on to shipping. "Zig-Zag" Conveyors offer a time-proven method of increasing production and lowering overall manufacturing costs.

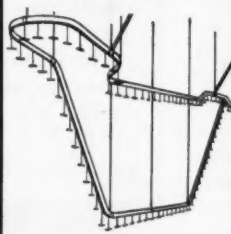
CHECK THESE IMPORTANT "Zig-Zag" ADVANTAGES AND FEATURES

VERSATILE



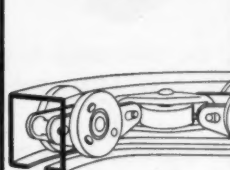
... applicable to industrial plants, warehouses and commercial operations of all types and sizes—no matter how large or small. Efficiently conveys unit loads up to 125 lbs. of products, parts, components, etc. at speeds of one inch to 100 feet per minute ... the only conveyor offering a proven multi-speed drive unit.

FLEXIBLE



... in fact, the most flexible conveyor in its class. May be installed to move up, down, in, out and around. Ideal for all types of overhead materials handling ... efficiently and economically conveys products from receiving, to inventory through all production processes, finishing and finally to shipping. Saves time and costs "all the way."

RUGGED



... furnished in one, top-quality grade ... inferior components are never substituted. "Zig-Zag" consists of a continuous chain of alternate horizontal and vertical wheel units which travels through a rugged steel track. Chain, track, power units and accessories are, all "designed for each other" for years of dependable service and trouble-free operation.

RE-USABLE



... "Zig-Zag" systems may be changed, expanded or relocated with almost 100% reusability. Economical to purchase and install ... plant personnel can easily "self-assemble," install and later relocate a "Zig-Zag" System. "Zig-Zag" will meet your needs now—and for years to come. May be later incorporated into an R-W "Twin-Trak" Automatic Dispatch System.

STOCKED



... in most metropolitan areas. Permits immediate shipment of all components for your "Zig-Zag" system. When necessary a complete system can be installed and operating in a matter of days. R-W's nation wide staff of factory trained, materials handling specialists are near by to take care of any service that may be necessary ... eliminates unnecessary downtime.

An R-W Sales-Engineer, at no obligation, will gladly survey your plans or facilities and submit a plan showing how "Zig-Zag" will best solve your materials handling problems. Write today for complete information.



Richards-Wilcox

MANUFACTURING COMPANY
MATERIALS HANDLING DIVISION

420 W. THIRD ST. • AURORA ILL. • Branches in all Principal Cities

Circle 97 on Reader Service Card

Shepard Niles Hoists: **JOB-MATED** for Greater **SAFETY**



Shepard Niles

Explosion-Proof Hoist

In load-lifting and moving operations, the difference between costly accidents and dependable, hazard-free performance lies in quality equipment.

Shepard Niles JOB-MATED Hoists provide superior performance . . . minimum wear and maintenance . . . and extended service life, because we specify the ideal combination of quality components to meet exact on-the-job conditions. Care like this in our plant means greater safety for personnel and equipment in yours.

Shepard Niles offers you a JOB-MATED Hoist for every application. Choose from vapor-proof and explosion-proof models . . . ¼-ton to 30-ton capacities . . . with the new Shepard Niles Safety Hook and Traveling Pushbutton Pendant as added safety features. For further information, write for descriptive bulletin. Ask to have a Shepard Niles representative call.



America's Most Complete Line of Cranes and Hoists

Member of Hoist Manufacturers Association, Inc.

SHEPARD NILES
CRANE AND HOIST CORPORATION

2770 Schuyler Ave., Montour Falls, N.Y.

Circle 106 on Reader Service Card

COST CUTTING IDEAS

vehicles narrow width (48") enables it to easily maneuver between lines of parked refrigerator cars. The Truckster has a 105" turning radius, delivers up to 50 m.p.g., goes up to 35 m.p.h.

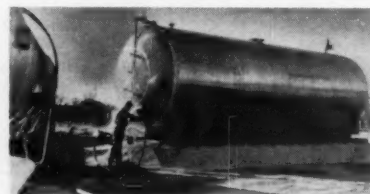
For transporting supervisors and other workers around the sprawling yards, the company uses electric-powered Trucksters. They go up to 15 m.p.h., go up to 40 miles before you have to recharge the battery. Pacific Fruit likes the electric models because they can be driven outdoors or indoors without fear of fumes from exhaust.—*Cushman Motors.*

Circle 262 on Reader Service Card

Aluminum Tanks Prevent Contamination

Corrosion-resistant aluminum tanks form part of a new storage system being used in the Minneapolis, Minn. area. The system reduces costs for dealers handling ammonium nitrate fertilizer solution.

The tanks are all-welded 22,000-gallon capacity, 10½ feet in diameter, 35½ feet long. They are installed at dealers' yards, receive ammonium nitrate shipped in tank



cars from St. Paul Ammonia Products Co. Later the fertilizer is transferred to tank truck (photo) for delivery to customers. The system avoids the drayage and demurrage costs the dealers would have to pay if they held the cars.

The tanks are aluminum because it prevents product loss from contamination due to corrosion. To store ammonium nitrate, aluminum tanks do not have to be

Continued on page 49

MOTION

...by proxy



Motion . . . movement . . . mobility . . . call it what you will, it's the heart of industry.

Man can move parts or products by one of two basic methods: back power or finger power. Finger power means pushing a button or setting a dial, and watching the product move AUTOMATICALLY to any one of a number of predetermined points. This is called AUTOMATIC DISPATCHING.

It takes experience, research, and technical knowledge to turn out a workable AUTOMATIC DISPATCHING system; it takes Systems Engineers with electrical and mechanical experience combined with complete manufacturing and installation facilities at their disposal.

With these diversified skills and facilities, the Jervis B. Webb Company will assume complete responsibility for putting your product in motion.

Send for free 8-page brochure on automatic dispatching



JERVIS B. WEBB COMPANY

8951 Alpine Ave. • Detroit 4, Michigan

Offices in all principal cities





MOTO-TRUC

MAGIC CIRCLE STEERING



**...for high stacking
stability plus
narrow aisle turning**

With MOTO-TRUC's *MAGIC CIRCLE* steering you can safely stack ceiling high with no sacrifice in maneuverability. *MAGIC CIRCLE* steering provides solid four wheel support, and up to 90° turns either side of center. There are no whipping casters to cause dangerous wobble or bucking... no complex steering linkage to increase maintenance or restrict turning.

No other small rider truck manufacturer offers the advantage of *MAGIC CIRCLE* two-wheel steering. It is available on all MOTO-TRUC high stacking outrigger trucks—in capacities to 4,000 pounds—for lifts up to 130" standard. Higher lifts and capacities are available.

Write for the Moto-Truc
Ride-A-Man truck catalog.

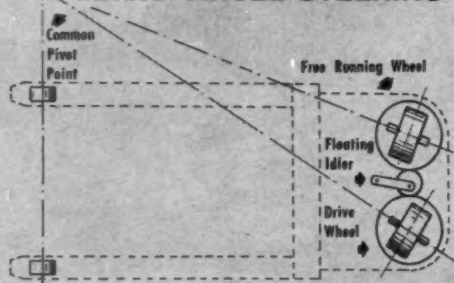


The MOTO-TRUC Co.

12403 TAFT AVENUE
CLEVELAND, OHIO

Largest Exclusive Manufacturer of "Walkie" and
"Small Rider" Type Trucks.

MAGIC CIRCLE STEERING—another MOTO-TRUC design exclusive.



All MOTO-TRUC high stacking rider models use Magic Circle steering for solid four wheel support that assures stacking stability and maximum maneuverability.

Here's How It Works:

The two rear wheels — one driving, the other free-running — are provided with ring gears connected by a floating idler. The idler is positioned off-center so that the point of contact between idler and ring gear is always increasing on one wheel while decreasing on the other. This action provides perfect steering geometry through a full 90° turn either to right or left.

The MOTO-TRUC Company
CLEVELAND 3, OHIO

COST CUTTING IDEAS

coated as do tanks made of some other materials.—*Aluminum Company of America.*

Circle 263 on Reader Service Card

Corrugated Containers Prove Economical

Westinghouse Lamp Division plant in Belleville, N.J. uses a triple-wall corrugated container for three interrelated jobs:

1. Receptacles and pouring bins for aluminum and brass light-bulb bases.
2. Containers for the bases in interplant shipments.
3. Storage devices.

The metal bases descend from a funneled chute into a succession



of Tri-Wall containers. The containers, fastened to wooden pallets, measure 48" x 42" x 30". Brim full, they hold 70,000 bases with a gross weight of 732 lb.

Transferred to a storage area, they stack four high. From the storage area, the containers are truck-loaded for a 60-mile run to the Trenton Plant. There, they fork lift each container onto a high rack, tilted to permit the bases to pour out into a hopper for further processing. A hinged gate in the containers provides a swinging door through which the bases empty.

Containers hold up well: George C. Stryker, material handling engineer of the Westinghouse Lamp Division says, "The triple-wall containers are holding up three and four times longer than we expected. Considering the heavy duty, we figured on a 3 month

life. But now, after nearly a year, most of them are still in use and still are going strong."

In the shipments to Trenton alone, Stryker estimates that the lightweight containers save between 40 and 50 percent in tare weight charges.

The containers in use at Westinghouse were made of 1,100-lb. puncture test, triple-wall corrugated board. Fluting techniques used on all three corrugated sections have increased the structural strength.—*Tri-Wall Containers, Inc.*

Circle 264 on Reader Service Card

Crane Control System Operates Automatically

A completely automatic crane control system moves coils from the production line to storage areas at an Ohio steel mill. A huge C-hook can pick up to 15-ton coils.

The operator merely selects the size of the coil to be moved, presses a start button. From this point, the crane operates automatically. It moves to the pick-up location, descends, bridges forward to insert the hook into the coil, and then hoists the coil. It travels to the determined storage area, deposits the coil, and returns to its homing station.

The automatic program control was applied to an old d.c. crane used to move coils from a bander to either a storage conveyor or an upender for storage.

Controls kept separate. Directo-Matic control equipment regulates the crane. Each control function is mounted in pull-out drawers for greater accessibility. Each control is made of easily replaceable sealed static plug-in modules.

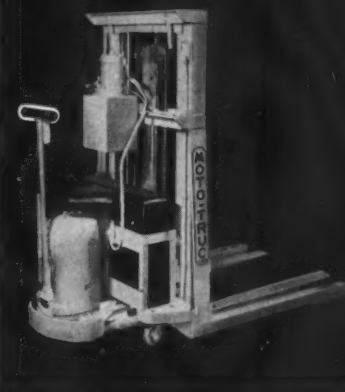
Hoist, bridge, and trolley motions are under automatic control. Motion is sensed by selsyn transmitters coupled to bridge and trolley motions and to the shaft of the hoist motor through gearboxes.

A present plugboard bank within the magnetic control allows variation and adjustment of slow-down and stop points. The programmed control will be adaptable to new storage layouts and destination points.—*General Electric Co.*

Circle 265 on Reader Service Card

MOTO-TRUC

Leads the field in
"Walkie"
Outrigger
Trucks



**An easy handling stacker
...priced below competition**

• This rugged walkie MOTO-TRUC is designed to stack from aisles less than 6 feet wide. Its four wheel suspension assures stacking stability while the articulated drive wheel provides maximum traction.

Available in both telescoping and non-telescoping models with standard lift to 152". Capacities up to 4,000 pounds.

Write For Moto-Truc
Catalog — full
specifications and
dimensions.



THE
MOTO-TRUC
COMPANY

12403 Taft Ave. • Cleveland, O.

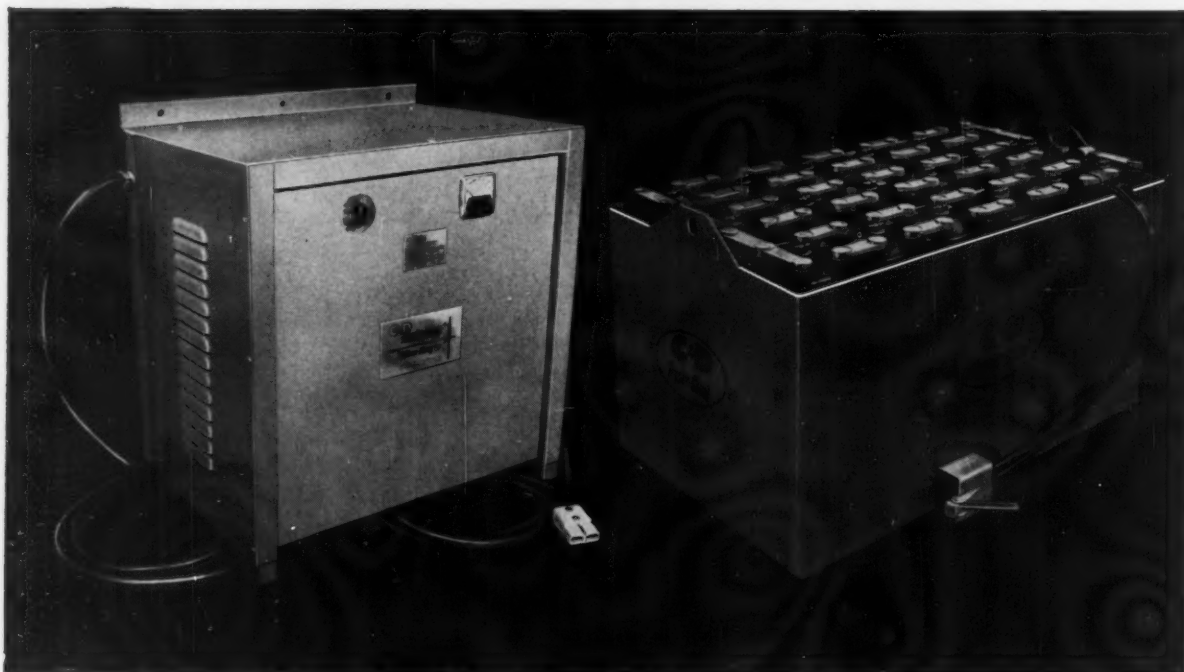
Circle 78 on Reader Service Card

ANNOUNCING OPERATION

90

NEW PROGRAM FEATURING BATTERY-CHARGER COMBINATION
ASSURES MINIMUM BATTERY COSTS FOR 90 MONTHS

FROM C & D!



Now, with C & D's Operation 90, you get a written warranty for your C & D battery and *AutoReg* charger.

The battery is C & D's *Slyver-Clad*® with *Hi-Impac** cell covers and containers. *Slyver-Clad* Five-Fold insulation and retention virtually eliminates shedding as a determining factor in battery life. *Hi-Impac* cell containers and covers, made of a unique shock-resistant material capable of withstanding a minimum impact of 150 inch-pounds, are practically unbreakable. Thus C & D's warranty provides for their replacement free of charge during the life of the battery.

The Operation 90 program charger is an *AutoReg*® static rectifier charger that automatically provides the proper charge for the battery. The *AutoReg* is the most modern, efficient charger available and is virtually maintenance free.

In C & D's Operation 90 program, you get single source responsibility for battery, charger, and service.

Complete details are in a new booklet. Write for a copy today. Learn how C & D's Operation 90 program can provide you with greater productivity, reliability, and profit from your electric truck fleet.



C & D BATTERIES
of Conshohocken, Pa.
DIV THE ELECTRIC AUTOLITE CO.

Manufacturers of *Slyver-Clad*® Industrial Batteries • *PlastiCell*® and *PlastiCal*® Batteries for Communications, Control, and Auxiliary Power • Producers of *AutoReg*® Silicon Chargers and *AutoCal*® Charger-Battery Combinations

*Trademark, C & D Batteries, Div. The Electric Autolite Co.

SUPPLIERS	
Building A	Building B

SEPTEMBER 1961



Travel charts point out MH benefits

*A technique to help you make layouts
that reduce material handling*

BY W. A. LYNAM, Case Institute of Technology

LAYING OUT a new plant? Trying to improve an old one? If so, travel charts can help you reduce material handling.

They make it easier to determine whether you can improve the layout you have.

They give you a quantitative index of the benefits you can expect from each of several possible layouts.

What is a travel chart? A travel chart resembles a mileage chart on a map. In mathematical language it is a *matrix* (an ordered set of mn elements, with m rows having n elements in each row). By a quick visual inspection of the travel chart you can find

Photo: Professor Lynam checks alternative layouts by means of a 3D model

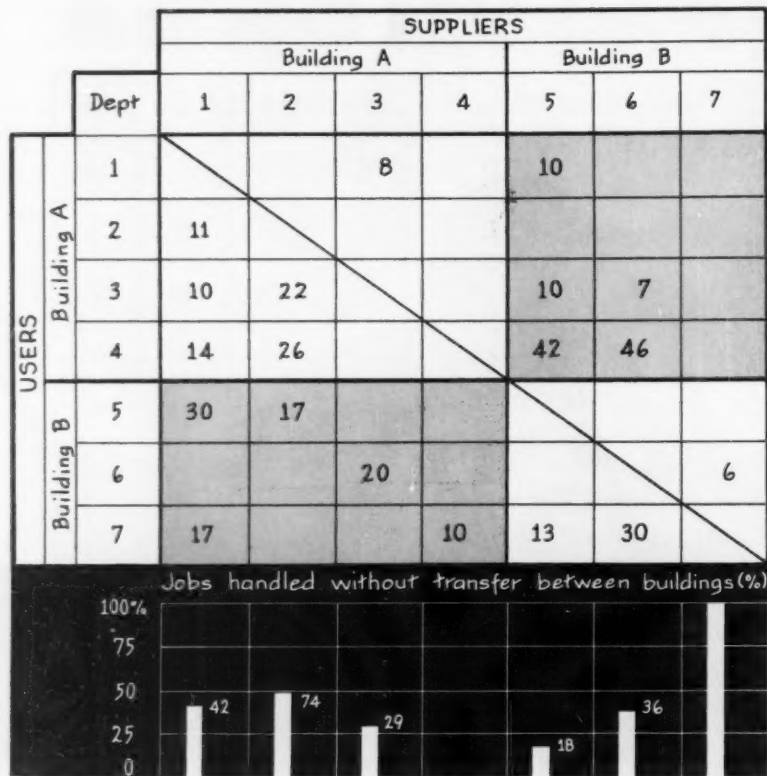


FIGURE 1—Travel chart: traffic between 2 buildings

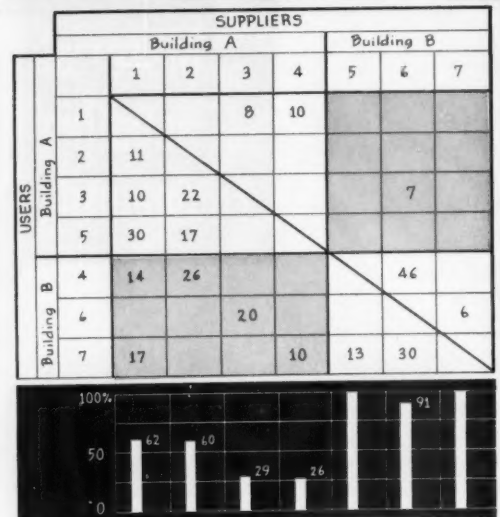


FIGURE 2—One department moved

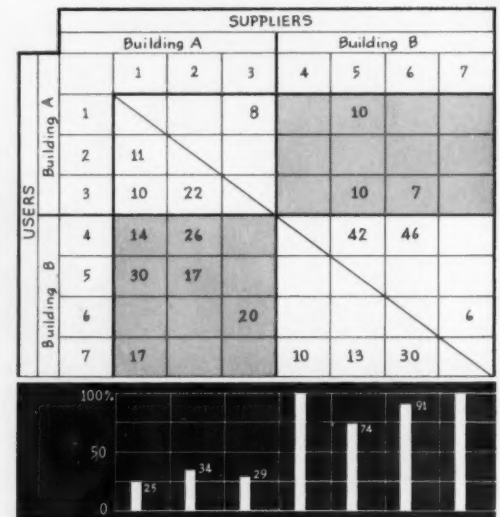


FIGURE 3—Complete rearrangement of departments

ways to improve layout, or you can go beyond visual inspection, using the travel chart as the basis for mathematical analysis of the data it presents. Mathematical analysis may give you a highly refined answer to your layout problem.

For clarity we will use the following terms to discuss travel chart construction:

Supplier: — Any area (or machine) whose output is used by some other area (or machine) within the confines of the facilities being studied.

User: — Any area (or machine) that obtains material from any contributor area (or machine) within the confines of the facilities being studied.

Unit of Measurement: — A unit which can be used as a common denominator to express the amount, and cost or inconvenience, of material handling from a supplier to a user. It may be the number of units, such as boxes, trays, truck loads. Weight may be the measure. A multifactor index may be a more sensitive guide. In general, the units or indexes which most sensitively reflect material handling cost should be used.

In a factory all areas except Raw Material Storage and Finished Goods Shipping are both supplier and

users. Thus a forge hammer department is a user receiving from bar and billet storage, and a supplier sending material to areas such as heat treat, shot blast, and machining. For this reason the travel chart shows the same names or designations as suppliers at the top of each column, and as users at the left of each row.

Using the chart. How the chart is used can be demonstrated with an example. This is based on the operation of a factory having 7 departments housed in two buildings. Most of its orders call for processing in only 3 or 4 departments, but there is a wide variation in which set of 3 or 4 departments the order requires—that is, there is no dominant pattern of work flow.

The problem is to arrange the departments so there is the least traffic between the buildings. Order records provide the data tabulated as a travel chart in Figure 1. This shows traffic between departments. For example, a total of 82 jobs requiring work in Department 1 (a supplier), 11 were sent on to Department 2 (a user), 10 went direct to 3, etc.

The tinted area on the chart shows the traffic be-

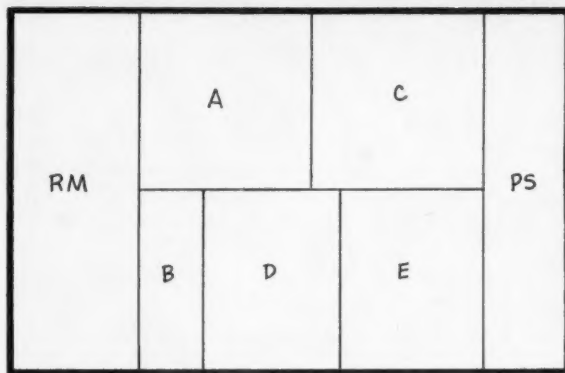


FIGURE 4—Original Layout

from to	RM	B	A	D	C	E	PS
RM		40	60	70	115	120	150
B	40		65	35	100	85	125
A	60	65		60	60	85	105
D	70	35	60		75	50	95
C	115	100	60	75		60	50
E	120	85	85	50	60		50
PS	150	125	105	95	50	50	

FIGURE 6—Distance Table for Original Layout

Product No.	Sequence of Operations	Parts Per Month	Parts Per Load	Loads Per Month	Load Factor	Units of Meas.
1	RM-A-E D-PS	7000	100	70	1	70
2	RM-E-C-D-B-PS	1000	30	34	5	170
3	RM-A-B-C-D-E-PS	8000	50	160	1	160
4	RM-B-E-D-PS	3000	20	150	3	450
5	RM-C-A-E-D-PS	3000	600	5	7	35
6	RM-PS	-	-	23	5	115

FIGURE 5—Data For Constructing Travel Chart

		SUPPLIERS						
USERS	Dept	RM	B	A	D	C	E	PS
	RM							
	B	450		160	170			
	A	230				35		
	D					330	555	
	C	35	160				170	
	E	170	450	105	160			
	PS	115	170		555		160	
Total		1000	780	265	885	365	885	4180

FIGURE 7—Move Table

tween buildings. The bar graph at the bottom of the chart shows what percent of the output of each contributor goes to a user in the same building.

By inspecting this chart you can see ways of reducing traffic between buildings. One way is to shift Department 4 into the same building with 5, 6, and 7. As Figure 2 shows, this change cuts inter-building movement 28 percent.

Additional improvement is possible. You can juggle the departments on paper, making a new chart for each arrangement. Figure 3 shows an arrangement that cuts material handling between buildings 34 percent. Many arrangements are possible. To test every one you need lots of time, or a computer.

Building the chart. A travel chart analyzing movement between only two areas, such as Building A and Building B, is primitive and demonstrates only a fraction of what travel charts can do. A more sophisticated use is analysis of total movement between each of several areas, when production is not straight-line.

Our second example is based on such a situation.

Figure 4 shows the original layout of the shop, with raw material storage (RM), five processing departments, and a packing and shipping area (PS). This plant makes five products, and also repackages and ships a supply item. Figure 5 shows the sequence in which each product moves through production. It also shows the quantity manufactured monthly, and the unit load sizes. Some products are easier to handle than others, because they are less awkward, or less delicate, or because it is convenient to move them using an easy handling method, such as gravity conveyors or chutes. You can take this into account by a "load factor" or multiplier that reflects the average difficulty or cost of moving the product. The number of loads multiplied by the load factor produces the *unit of measurement* for each item, shown in the last column of the table.

To transform this information into a travel chart you need a distance table (Figure 6), of handling distances between departments.

The next step is to set up a move table (Figure 7) showing the total number of moves for all prod-

		SUPPLIERS							Total
		RM	B	A	D	C	E	PS	
USERS	RM								
	B	18,000		20,800	11,900				50,700
	A	13,800				4,200			18,000
	D					49,500	55,500		105,000
	C	4,025	16,000				20,400		40,425
	E	20,400	38,250	8,925	8,000				75,575
	PS	17,250	21,250		52,725		8,000		99,425
	Total	73,475	75,500	29,725	72,625	53,700	83,900		388,925

FIGURE 8—Travel Chart, Original Layout

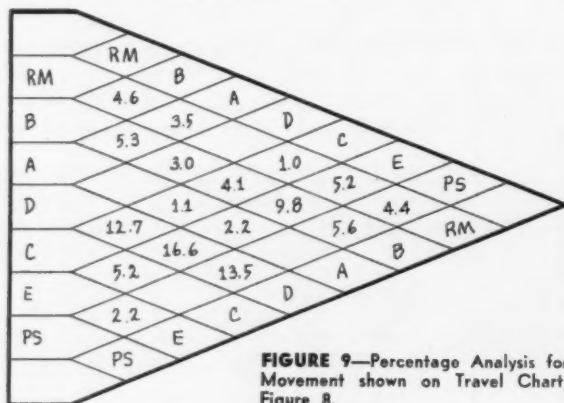


FIGURE 9—Percentage Analysis for Movement shown on Travel Chart, Figure 8.

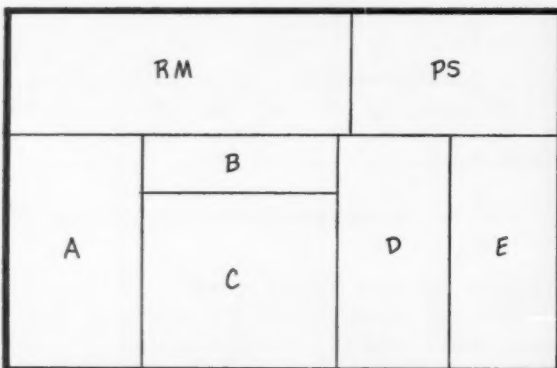


FIGURE 10—Improved Layout

		SUPPLIERS							Total
		RM	B	A	C	D	E	PS	
USERS	RM								
	B	18,000		20,800		20,400			59,200
	A	16,100			3,850				19,950
	C	2,625	6,800				30,600		40,025
	D				18,150		38,850		57,000
	E	21,250	42,750	15,225		5,600			84,825
	PS	10,350	13,600			36,075	10,400		70,425
	Total	68,325	63,150	36,025	22,000	62,075	79,850		331,425

FIGURE 11—Travel Chart for Improved Layout

ucts from each supplier to each user. Get the data from the *sequence* and *units* columns of Figure 5. For example, Product 1 and 3 call for moves from RM to Dept. A, for a total of 70 + 160 units of measurement. This appears as 230 in square RM/A in the move table.

Construct the travel chart (Figure 8) by multiplying each entry on the move chart by the corresponding entry on the distance chart. Each figure on the travel chart is then an index of the amount of material handling from each supplier to each user. If the departments are listed in order corresponding to arrangement of the plant layout, and the flow of product through that layout figures above the diagonal line also reveal backtracking of the product. These backtracking movements may be regarded as undesirable because they double the distance. If so, you can double the value of entries above the diagonal, to put a strong bias against backtracking into the subsequent processing of the data. This has been done in preparing Figure 8.

Notice these things about the completed travel chart:

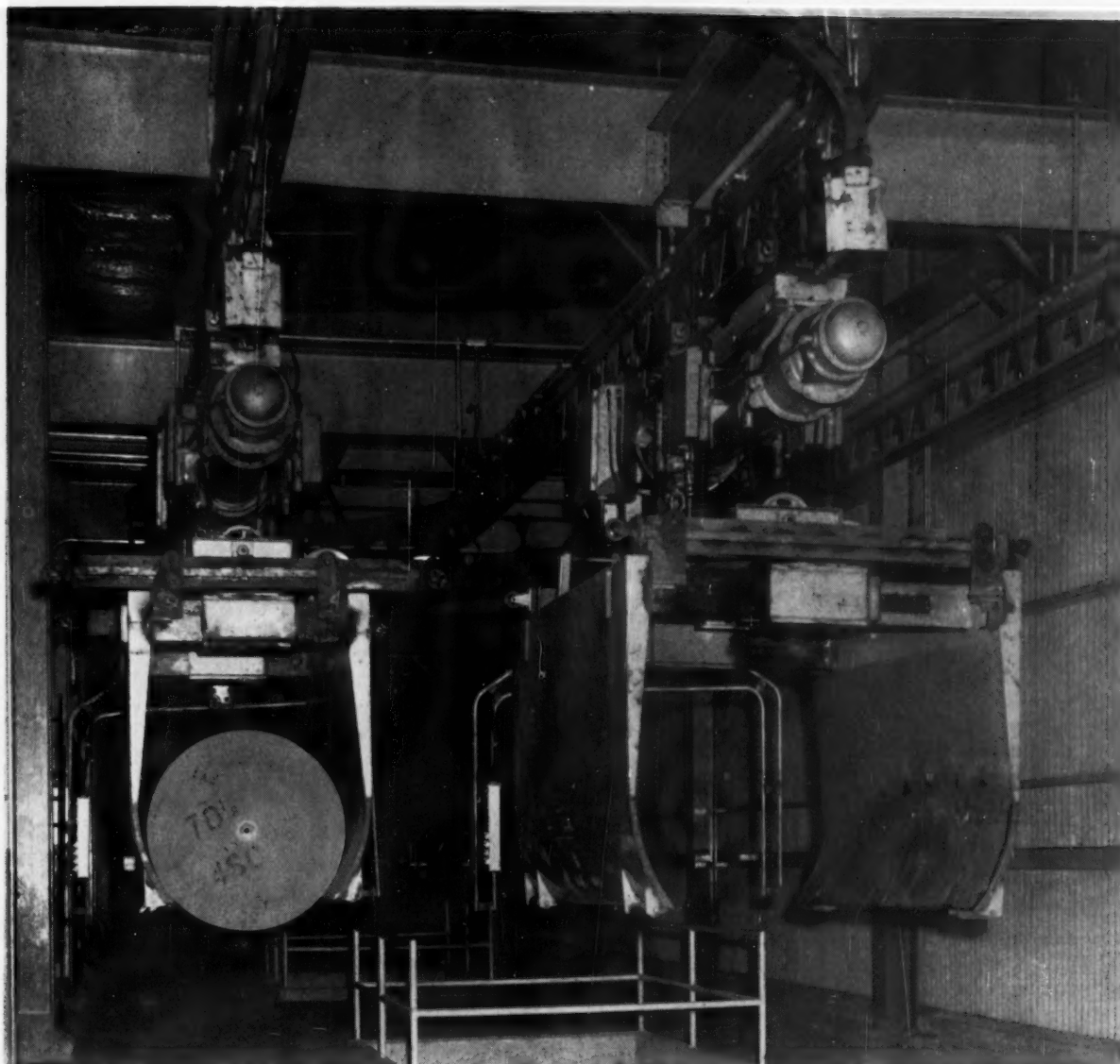
1. The grand total (at bottom, right) is an index of the whole material handling activity of the plant.
2. The values nearest the diagonal show short-distance (and presumably low-cost) material handling.
3. Those values farthest from the diagonal call attention to layout situations which can probably be improved.
4. For mathematical analysis the distance of a value from the diagonal can be taken as a measure of the importance of making a layout change to improve the particular value. That is, since B-E is 3 squares from the diagonal, the importance of changing it can be considered $3 \times 38,250$, in comparison with the importance of changing B-PS which is four squares away, or $4 \times 21,450$.

To help analyze the chart you can make a summary showing in percentages the movement between areas, like Figure 9. This clarifies inspection because it recaps both forward and backward movements.

In inspecting Figures 8 and 9 you will notice high figures for movements involving B-E, D-E, B-C, and D-PS. These suggest making a layout to shorten the distances between these departments. One such revision is shown as Figure 10, and with it as a basis, revised distance and travel charts were made. The new travel chart (Figure 11) revealed improvement, since the total index was cut from 385,000 to 304,000, a 20 percent reduction.

This may be a satisfactory gain. But if you want to be sure it is the best answer, subject all the figures to thorough mathematical processing. The purpose is to minimize the total index. This requires testing a large number of layouts, and the problem is complex, best suited to solution by computer.

The travel chart technique presents information about layout and material movement in a form which helps you make improvements. It turns out objective, quantitative figures that help you make comparisons. You can refine the method and make it fit your situations. It is not necessarily the final word—your common sense is still essential. But if you use them right, travel charts can be a big help. ♦



Monorail system speeds paper rolls to shipping

AUTOMATED ROLL HANDLING produces amazing results at the Union Bag-Camp Paper Corp.'s Savannah plant. Production averages 2,400 tons of paper and board rolls daily, demands an automatic roll handling system.

Union Bag-Camp's system is the first of its kind in the pulp and paper industry. It's an automatic system using an overhead monorail. They built automatic features into the in-floor and overhead equipment.

The system is over 1,600 feet long, has double tracks with sidings and bypasses at each pickup and delivery point in the plant.

H. J. Sundahl, construction engineer for Union Bag-Camp, says, "Control features make it possible for us to automatically handle products from each of our 7 paper machines to one or all of the 13 roll unloading stations or shipping points."

The in-floor part of the system consists of:

A. Loading stations which have:

- Roller flight conveyors
- Bander conveyors
- Scale conveyors
- Roll ejectors
- Live roller roll pickup stations.

B. Unloading stations which have:

- Belt conveyors
- Roller flight conveyors
- Upenders
- Tilting tables
- Escapement mechanisms
- Industrial truck pickup points.

The overhead part of the system has:

A. Automatic motorized tractors with:

- Selectomatic controls
- Rubber drive wheel
- Fluid drive motors
- Couplings for attaching roll carriers.

B. Roll carriers, consisting of:

- Roll cradle
- Hoist
- 9" wheel trolleys

C. Monorail, which has:

- Rail
- Switches
- Hydraulic lift section
- Shock-Proof electrical conductors

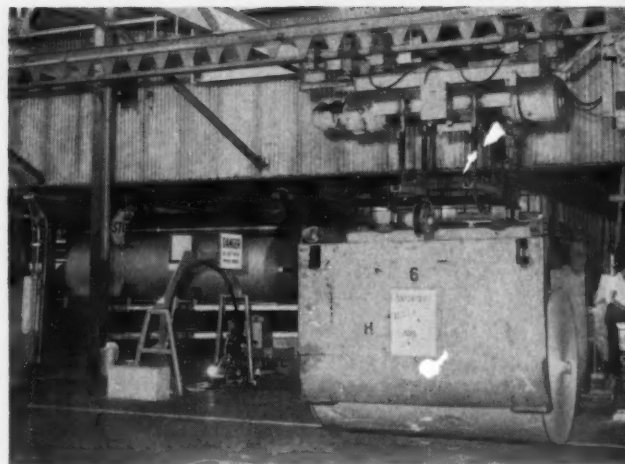
What the system does. The carriers handle rolls any length to 96 inches maximum, and 18 inches to 60 inches diameter. The carriers are self-powered and self-spacing. After loading, operators set selector switches for destination and thereafter control is automatic. After going to the delivery point, the load lowers and empties automatically. The carrier retracts and lifts its grab mechanism and takes off on the main track. There it cruises until it finds a loading siding with not more than one carrier in it. It goes into the siding, waits for its load. There are 18 carriers, each of 10,000-lb. capacity. They travel 100 f.p.m., use bypass tracks to seek the shortest routes.

Floor conveyors at the seven paper machines take the rolls across a scale, then to a pickup point for the carriers. At three board machines automatic banders work in the floor conveyor between the scale and the pickup point. Operators control the floor system from a panel at each scale.

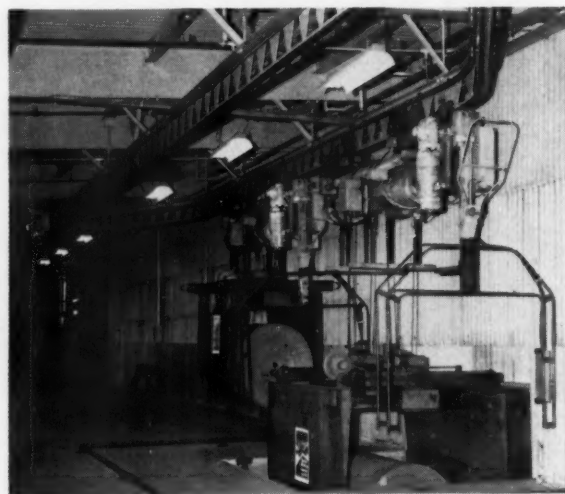
At the delivery point, roller flight conveyors or inclined ramps serve as accumulator lines for loading box cars. Electric eyes and limit switches protect delivery points against carriers trying to empty grabs on filled conveyors or upenders. Differences in elevations in two sections of the mill are taken care of automatically by a lift section in the main monorail line. Lowering controls compensate for differences in elevations at pickup and delivery points.

Equipment does the work. The loading station at Machines 1 and 2 is typical so we shall follow its operation.

Behind No. 1 machine, a roller flight conveyor runs the entire width of the machine. It has 3½-inch-di-

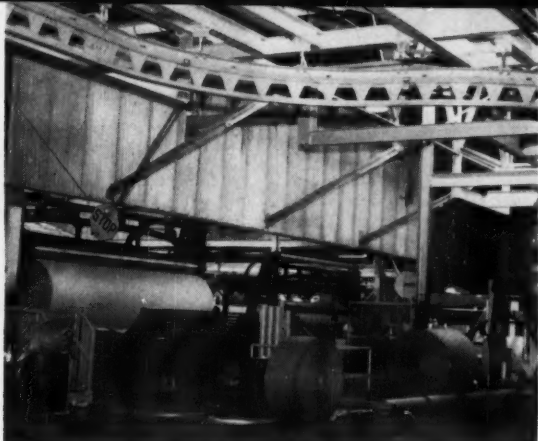


BANDED ROLL ready to be dispatched to a designated unloading station. From the bander, rolls move onto a rubber belt scale conveyor. A hydraulic roll ejector built into the scale table moves the rolls from the scale conveyor to the roll pickup point.

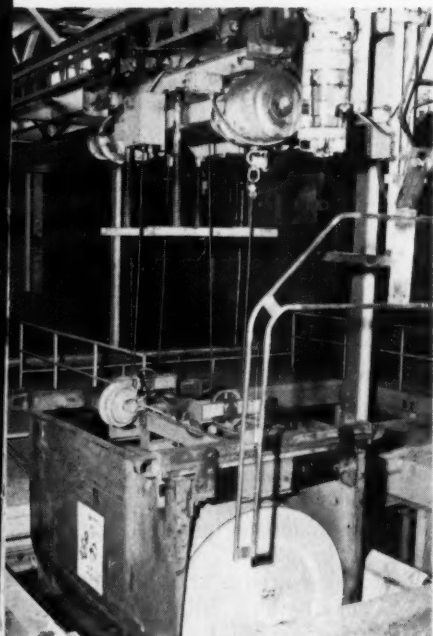


CARRIERS travel 100 f.p.m. in a corridor between the new and old machine rooms. A carrier is lowering into the well at Station C-1. One carrier waits for the station to clear, another approaches in the background.

ameter concave rollers, 18 inches wide. The conveyor mounts flush with the floor. A 15-horsepower electric motor chaindrives the conveyor through a reduction gear. The conveyor speeds 37 f.p.m. Behind No. 2 machine, another roller flight conveyor also runs the entire width of the machine. This conveyor feeds a banding conveyor. Automatic roll banders take care of up to 65-inch-diameter rolls. Both conveyors discharge onto a common scale conveyor. This drives at 43 f.p.m. The scales have 12,500-lb. capacity, read in 2-lb. increments. A hydraulic roll ejector built into the scale tables has a live roller faced kicker arm, powered by a 4-inch-diameter, 1,000 p.s.i 10-inch stroke hydraulic piston.



JOINT LOADING STATION at Paper Machines 1 and 2. Individual loading stations serve the other five paper machines. They all work alike, except that the board machines 2, 4, and 6 have automatic roll banders.



CARRIER lowers a paper roll at Station B-3. This will be lowered directly onto the upender. Carrier in the background is waiting to unload at this station.

Three types of unloading stations. Main difference lies in the equipment that receives the roll from the carrier. Receiving equipment consists of:

- Rubber belt conveyors at Station 1 and 2
- Automatic roll upenders at Stations 3, 4, 5
- Tilting tables at Stations 6, 7

All receiving equipment connects electrically to the monorail to prevent the carriers from lowering a roll when one is already in the receiving station. Electric eyes or limit switches control the drives for the upenders and the roller flight conveyors. Electric signals control the belt conveyors and tilting tables as the carrier passes control points on the monorail.

Selectomatic controls allow the carrier to travel

automatically to a designated discharge point, discharge the rolls, return to a roll loading station. The roll carrier is mounted on the monorail on 30,000-lb. capacity trolleys, has a roll cradle and an electric hoist for raising and lowering the roll cradle.

They open and close the roll cradle through a chain and gear drive by a 1-horsepower, 220-volt motor. Four thousand feet of Trojan rail trackage supports the motoveyer and roll carrier. The rail is 16 inches deep with a 3 1/3-inch-wide by 13/16-inch-thick bottom flange. There are 46 motor operated track switches, all automatically thrown.

Rolls go on their way. Now let's follow a set of rolls from the time they're made on No. 1 paper machine winder. The machine lowers the rolls to the floor immediately after the winder. The roll handler operator stencils some figures on the roll ends. Then he moves a roll onto the in-floor roller flight conveyor. If the rolls are narrow, he can move a group of rolls less than 96 inches in width onto the conveyor. Important point: A group of rolls must all go to the same destination. Stop-start buttons next to the scale conveyor control the roller flight conveyor. Rolls from machines 2, 4, and 6 pass through the automatic banding machine, or the scaleman can set controls which allow rolls to pass through the banders without being banded.

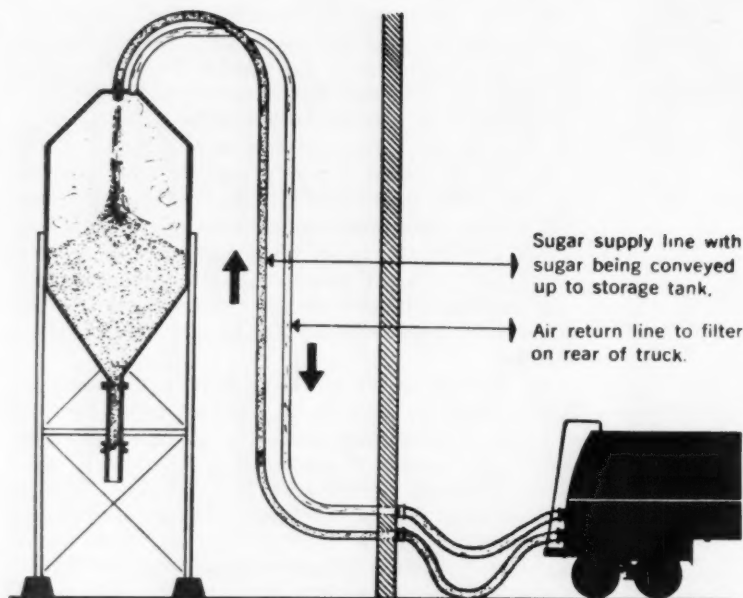
As the rolls arrive on the scale from the conveyor, men stencil the weight on the roll ends. The rolls move to a roll pickup point. The scaleman also operates a hydraulic roll ejector there. As this is being done, an empty carrier waits in the loading siding of the monorail system. All loading sidings with the exception of the one at No. 6 machine accept two empty carriers. The No. 6 is short, takes only one.

Controlling the system. Controls make the first empty carrier automatically stop before reaching the actual roll pickup point. From this waiting position, the operator moves the carrier to the roll pickup points, positions the carrier, and closes the roll cradle. He then selects the load destination, sets two dials on the control panel mounted on the carrier. From here on, the carrier operates automatically until it returns empty to a loading siding.

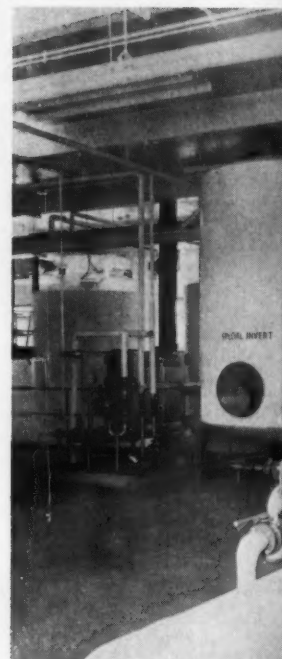
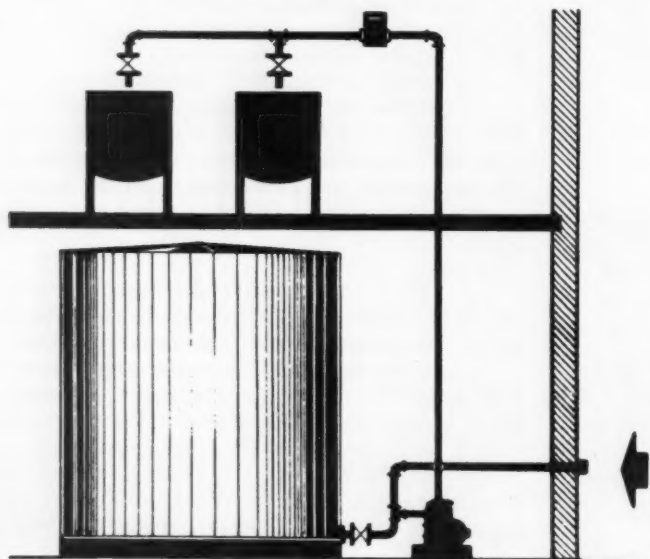
The carrier automatically raises the rolls to the travel position and moves away from the roll pickup point. The carrier then passes a control section in the electrical conductor mounted on the monorail. If the track switch which connects to the loading siding from the main line is clear, it moves into entering position. If not, it stops until the switch becomes clear.

The loaded carrier selects and throws switches to take it the shortest way to the designated unloading station. If clear, the carrier moves into position over the roll receiving point. The carrier stops, lowers the roll, opens the roll cradle, and raises the cradle to travel position. The rolls remain in the roll receiving station until the roll cradle raises. The carrier then moves across another control point on the electrical conductor which transmits a signal to the roll receiving station, causes it to operate, moving the deposited roll. ♦

Curb service speeds sugar delivery



TYPICAL dry sugar receiving system features pneumatic lift of the product through a tube. The sugar is conveyed up the tube by air pressure from the truck. The second tube returns the air from the storage tank to a filter on the rear of the truck. Arrow shows where sanitary hoses from the truck connect with the plant outlet to carry liquid sugar to customer's storage tank. From there, it is pumped through pipes and a measuring meter to vats above in a blending room. Then it flows directly into the beverage process.



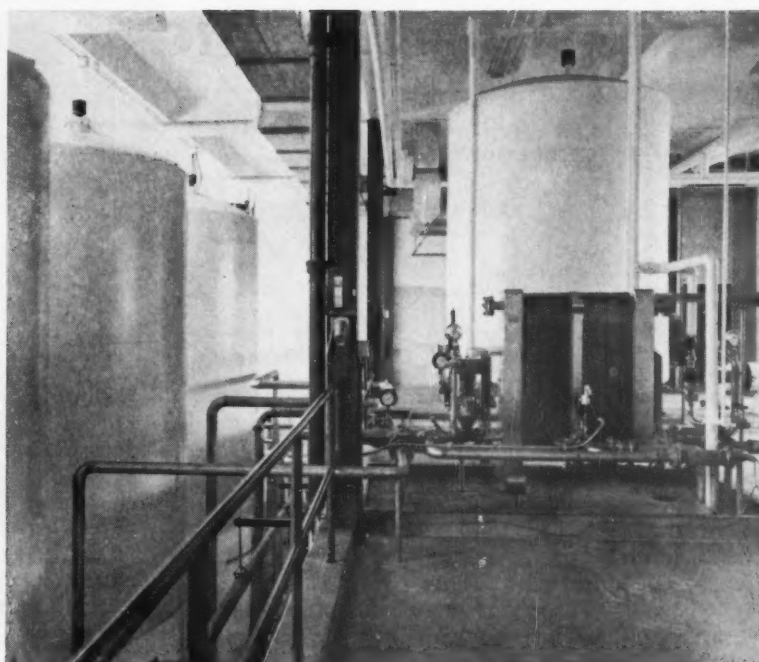
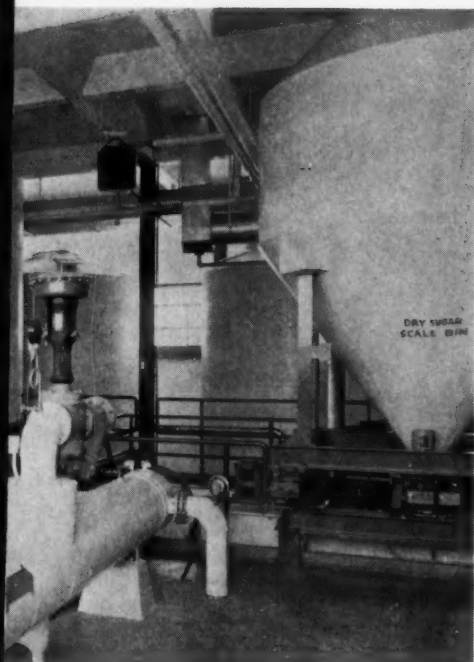
MILLIONS OF POUNDS of bulk sugar a month go through the Great Western Sugar Company's Bulk & Liquid Sugar Terminal in Brookfield, Ill. Amazingly, a foreman and three men, operating a completely controlled electric-pneumatic system, handle it all. Brookfield is near Chicago, the largest industrial sugar market in the US.

Bulk sugar arrives at the terminal in Airslide bulk rail cars to be stored, processed, and then delivered to the customer's plant by sanitary trucks.

The terminal makes two liquid sugars, invert and simple. Potential peak capacity: 50,000 gallons daily.

Great Western has offered bulk sugar in carloads for over 25 years to manufacturers on rail sidings. Now, the terminal makes it possible for those who are not on a rail siding, or who are not carload users, to get either liquid or bulk dry sugar in truck loads. They can take advantage of the bulk savings.

Great Western equipment delivers bulk dry sugar to customers either pneumatically or mechanically. In the mechanical system, the truck scrolls the sugar out onto



TWO-STORY liquid sugar storage tanks and the stainless steel plate cooler at the Brookfield Terminal are shown in the photo, right. Photo, left, shows the scale bin and other equipment used for dissolving sugar. The entire process is controlled.

a conveying system to the storage bin. Pneumatically, the truck simply hooks two hoses up to pipes that lead the bin. Gone are bags of sugar and all the labor and to a storage tank and blows (or lifts) the sugar into difficulties in handling them. And delivery of liquid sugar replaces the customer's need for dissolving sugar in his own plant.

The car unloading area has two tracks. The sugar goes from the bulk sugar cars by an enclosed underground conveyor. Elevators lift the sugar into storage bins. And enclosed scrolls in the plant move the sugar from storage to points of use. The terminal houses all equipment for conditioning the sugar and for processing liquid sugar.

Cleanliness is the rule. Throughout the sparkling clean plant they stress quality control. The job starts with the testing of sugar when it arrives from the West. They analyze for granulation and cleanliness.

Three bins hold the equivalent of 4,000 bags apiece. The fourth bin holds about 3,000 bags and goes directly to the liquid process. From these bins, the sugar can be conveyed to the process station. Or it may be loaded by gravity directly into bulk trailers and delivered to the customers. They screen all dry bulk sugar to remove any lumps that may form by storage weight.

The bottom cones of the bins are equipped with slidegate valves and nylon loading sleeves. The loading area has two truck scales. Bulk dry and liquid trucks are weighed before and after loading without moving.

In the processing of liquid sugar, the lab tests each

batch regularly to make sure that it meets the specifications for concentration and other standards of the trade. The lab also maintains control of the boilers used for process steam.

The liquid sugar process operates automatically. Signal lights indicate the sequence for weighing, measuring, dissolving, mixing, storing, and conditioning. An alarm indicates trouble. The system operates completely enclosed. The tanks that hold syrups are plastic lined. They're agitated to keep the contents homogeneous at all times. They're ventilated with filtered air to prevent moisture condensation, and each tank has germicidal lamps at the top to keep sterile air above the syrup. The liquid sugar is made with demineralized water, and the syrup is carbon treated to assure crystal-clear quality.

The liquid sugar is pumped from the inside storage tanks through sanitary hoses with stainless steel fittings. The trucks are filled through their outlet lines to prevent aeration of the syrup.

Great Western points out 7 main advantages of the system:

- No idle hands.
- No contamination.
- No spillage losses.
- No messy, slippery floors.
- No wasted storage space.
- No clutter of bags.
- No complicated inventory.

True, the customer must install special receiving equipment in his plant for dry or for liquid sugar. But the advantages pointed out above, pay the way. ♦

Packaging better—not cheaper

By SEIBERT L. ROWLEY JR., packaging specialist Distribution Transformer Dept., General Electric Co.

LET'S STOP screaming for package cost reduction. Let's instead seek package cost improvement. It's quite desirable to lower the cost, so long as we don't lower the package performance. But we should emphasize a more important point: Seek better performance at the same cost.

We industrial packagers are lucky because, by using logic and reason, we arrive at a good, practical package. And we expect our customers to appreciate the features. Consumer packagers, on the other hand, must worry about a fickle public, point-of-purchase impulse buying, brand name identification, and emotional appeal.

Conserve resources. Industrial packagers should use the cheapest and fewest materials that will do the right job. Also, we should conserve packaging material resources. So, let's eliminate unnecessary material in packages.

It's worth laying out a logical packaging program as you would a manufacturing program. Here's why. At General Electric, costs of packaging material rank third, exceeded only by costs of sheet steel and copper. You dare not be haphazard with that much money.

Packaging engineering steps. We work out our packaging program into a series of steps. Follow these and you will have a useful program.

Motivation. Who gets the ball rolling?

- 1—New products often need new packages.
- 2—Customers want a package that's safer or easier to work with.
- 3—Engineering wants better protection for products.
- 4—Standardization, so you can get along with fewer kinds of packages.
- 5—A continuing review program which often improves packages.

Protection required. A basic, early consideration. The difficulty is to figure how much protection the package must provide. Consider more than the product. Decide, for example, how you will ship. We find Parcel Post hard on packages. It's high speed and the packages are easily thrown around. Trucking, however, often is somewhat easier, possibly because the driver gets the same shocks as the packages. So, he's careful.

Determine with scientific measurements the protection your packages need. Or use trial and error. Perhaps you'll get the best results with a combination.

Handling. It frequently influences design. Suit the package to the transportation and handling, such as conveyors, fork trucks, hand trucks, cranes.

Quantity. The number of packages you need. Often you can't use certain packages because the quantity will not support some manufacturing processes. We find it cheaper to make cartons at the plant in quantities of 200 or less. Above this, we buy from the outside. Remember, your source of supply will influence your packaging program.

Container design. How to get ideas:

1—Analyze. We usually know which material to use. Sometimes, however, we have to get a new idea. So we hold a brainstorming session to start ideas flowing. Then we evaluate the ideas, pick out three or four of the best for further investigation. Eventually, we wind up with one or two to try. But we file all the brainstorms, frequently find some of them useful later.

2—Help from others. Once we decide on packaging direction we invite advice from vendors, our own engineers, our own representatives from purchasing, sales, and marketing. We find our people more receptive to using the package when they were in on the early development.

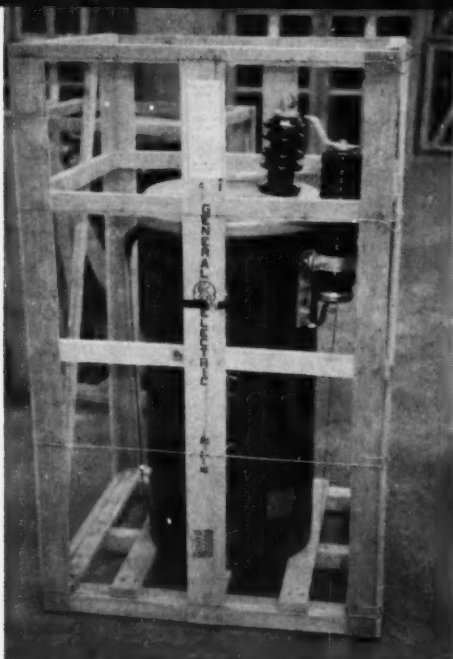
3—Packaging Council, a GE organization directed by the Packaging Development Service, Schenectady. It's divided into heavy industrial, consumer, light industrial, and defense groups. All participants are interested in distribution of company products. Groups meet from time to time at various GE plants, look over recent packaging developments. Criticism and suggestions are freely offered, often accepted.

Laboratory tests. They're vital to good packaging. We have all the standard testing equipment, conburs, vibration tables, all-weather chambers, compression test equipment, and others.

Field tests. For actual experience. A package can pass laboratory tests smartly and still fail in use. So we ship packages all over the country in carloads and truckloads, return them LCL and LTL.

Feedback. The follow through. Even after the package is being produced and used, we continue to ask warehousemen and customers how the products arrived, condition of contents and containers.

Does our program work? Our bread-and-butter



DISTRIBUTION transformer ships safely in wire-bound, much lighter than former solid wood crate. GE discovered export handling is gentler because stevedores can see the product. Transformer weighs 350 lb. Lift truck with finger attachment can carry six crates, three side by side and three on top of them.

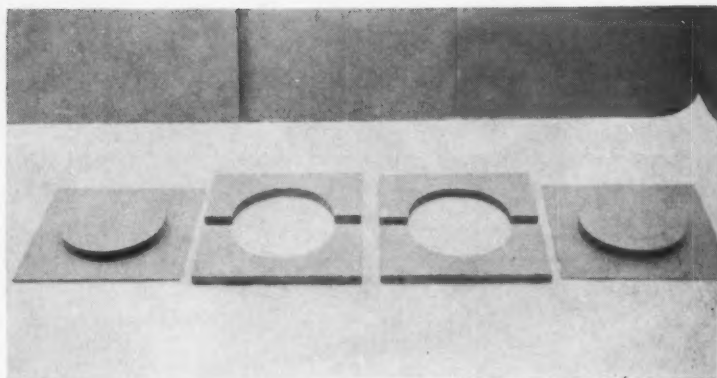


UNIVERSAL BOXES enable GE to standardize on supply parts packaging. Two sizes handle nearly all parts: 38" X 48" and 30" X 30". Internal boxes come in two sizes: 9" X 9" X 4" and 9" X 9" X 8".

line, transformer packaging, is a good example of how well a packaging program works. We changed from wooden crate to wirebound in 1947. Although we have searched for improvements, we still use the basic wirebound.

We have, to be sure, modified it. We changed the top to take advantage of tariff exemptions that allowed us to ship into some areas without container charges. We now use a base that interlocks without nails so workers can remove the mat section in less than 30 seconds.

We substituted lighter material in the corners of the container. But we found stacks began to lean in a month. So we returned to the heavier corners, convinced that the wirebound box we developed is as right as we can make it.



GE CONSERVES corrugated, uses circular cutouts for end cushioning. This package holds 84-lb. lightning arresters. Carton weighs only $\frac{2}{3}$ of previous corrugated package and packs in 22% less time.



WORKERS STORE parts packed, ready for shipment! This keeps shipments current, lets them load trucks at the same time papers calling for parts are sent to the stockroom. It used to take 3 to 5 days from receipt of order until shipment.

Still looking. This doesn't stop us, however, from looking into new material. We continue to seek ways to improve packages.

This container does everything it must. There are scarcely any damage claims. And it costs us about the same to make as did comparable wirebounds in 1949, despite general cost increases elsewhere. Our manager of Packaging Development Service, Bill Newman, figured we must reduce packaging costs 7 percent each year just to stay even. So, having held the line with this wirebound for 13 years leads us to feel we've contributed significantly to the distribution transformer department.

And this was made possible by using the listed package engineering steps. I credit this program for success of General Electric packaging. ♦

In this seventh article of the UPGRADE series Sims analyzes typical distribution patterns, shows how they offer opportunities for better MATERIAL FLOW MANAGEMENT.

Controlling MATERIAL IN DISTRIBUTION

By E. RALPH SIMS, JR., Consulting Management Engineer

Ask a man in business to define *distribution* and the way he does it reveals his specialty. A power company manager talks of distributing current, the office manager describes routing of documents, an accountant tells you how to allocate charges to various accounts.

In material handling we use distribution to name the whole movement of things from point of origin to point of use. In my definition *distribution includes all physical movement in marketing, from the last manufacturing operation to placing the product in the consumer's hands at the retail store, or until the retailer delivers it to the consumer's home.* This embraces packaging, transportation, warehousing, and all wholesaling and retailing activities. Thus marketing is physical distribution plus advertising and selling.

High Cost of Distribution: The world, and particularly North America, is in a distribution revolution. We manufacture in high volume efficiently. We communicate effectively, calculate electronically. But the high cost of distribution throttles our delivery of products to the user. Consider farm-produced food. The farmer's productivity has increased tremendously in recent years. His selling price has not appreciably increased, and for some items it has gone down. Yet the consumer pays more for food.

Food—A Favorable Distribution Pattern: Still, food is probably our most efficiently handled commodity. Farmers have used mass production methods for years. They plant and harvest with machines that are excellent examples of automation. It is hard to imagine a machine more efficient than the device which cuts, bales, ties, and loads hay while moving ten miles an hour.

Processing Automatic: A visitor to a modern canning plant, is aware of the high degree of automation in food processing. Raw material arrives by truck or railcar, and goes at once by conveyor to the first operation. There is no multiple handling. The plant prepares, cooks, packages, and cases the food automatically. Incoming bottles and cans arrive in the cartons they will ship out in, are unloaded, washed, packed, capped, reloaded, and sealed automatically. Conveyors deliver the cases to automatic palletizers, fork trucks carry the pallets to storage or directly to trucks and cars for shipment.

Costly Pluses: These activities do not contribute to higher food costs. Part of the price rise is accounted for by new ways of processing and packaging that do the housewife's work for her. We cook, we freeze, we package so food can be heated and served in the package. If foods were products used in industry, the user would recognize the labor cost saved by processing, and would welcome the savings.

The housewife, however, does not figure that way. Even if she comprehends what is taking place when food costs rise, she is reluctant to admit that much of the rise reflects a transfer of labor from her hands, by processing steps which require more costly packaging, refrigeration, and handling in distribution.

Where Handling Costs are High: Beyond the processing plant the handling of food products loses efficiency. Distributor warehouses receive the product in unit loads, but they must make up orders for the retailer by setting up mixed pallet loads—a case of soup and a case of beans, a carton of soap and a sack of yams. At his store the retailer unloads by

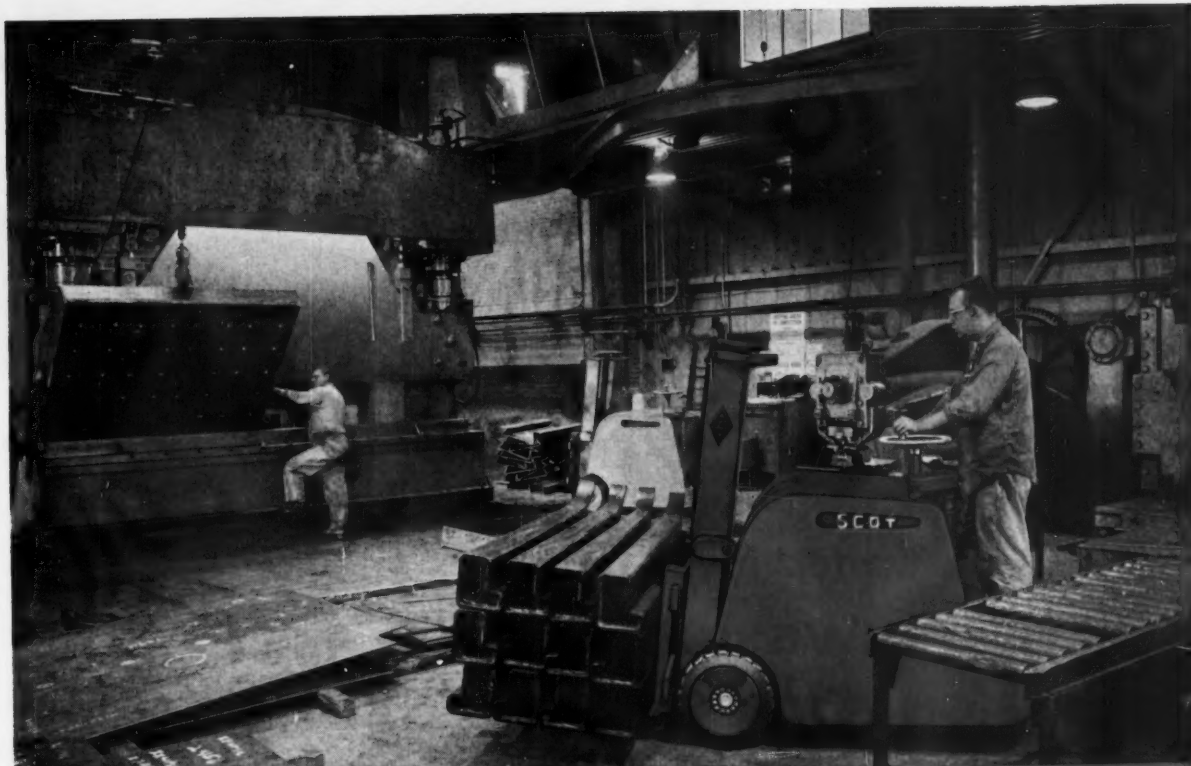


Photo courtesy of Reighart Steel Products Corporation

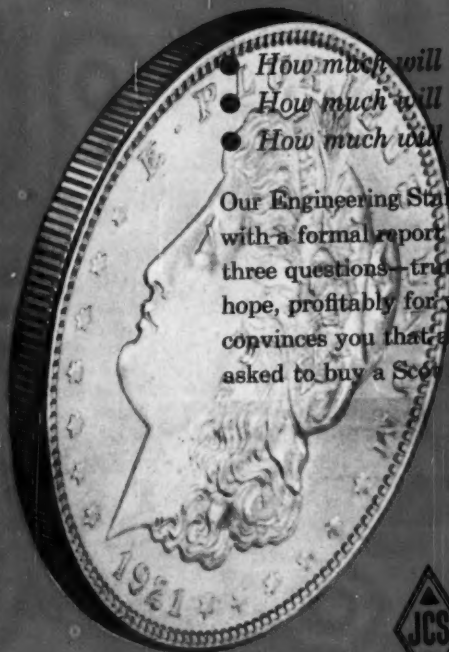
GET A LOAD OF THE



ELECTRIC LIFT TRUCK

PATENTS PENDING

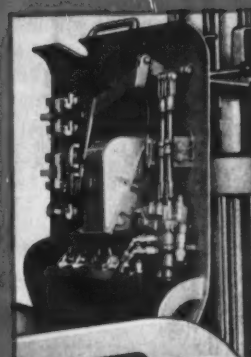
...you may lower the load of Your Material Handling Costs



- How much will it cost to buy a Scot truck?
- How much will it cost to use a Scot truck?
- How much will it cost to maintain a Scot truck?

Our Engineering Staff stands ready to present you with a formal report which will answer these three questions—truthfully, accurately, and, we hope, profitably for you. Only if our analysis convinces you that a profit will result, will you be asked to buy a Scot Electric Lift Truck.

Meanwhile, ask for Bulletin 3000 (on the Scot No. 3) and Bulletin 4000 (on the Scot No. 4).



Now Scot get-it-ability



JAMES CAMPBELL SMITH, Inc.
WILLOUGHBY, OHIO



Eight feet of space lets the 922 come through with fast clean-up work. Notice the operator sits high and clear, has excellent visibility all around. Lift arms and the load are well in front of him. He's safe and confident and so are others working around him.



Cleaning out bays around open-hearth furnaces, one of many jobs the Cat 922 wheel loader does at this steel mill. Cat Diesel Engines power the loader line, use low-cost furnace oil. Gasoline engines are optional on the 2 smaller models.

For varied jobs—for dependability **SOUTHWESTERN STEEL MILL** **PICKS A CAT 922 LOADER**

Those bold, black letters are pretty familiar around this mill's open hearths. They've used Caterpillar track-type loaders since 1956—ripping out and loading slag, handling coal, etc. Last January they needed a mobile loader. Wheels were the only answer. They picked the new 1¼-yd. Cat 922—a choice indicated by their 6 years of experience with the long-term economy of Cat track-type loaders.

The 922 has put out the performance they expected—or even a little better. It's busy cleaning out around furnaces, stockpiling ore, leveling fill on a new storage yard, maintaining plant roads and cleaning around buildings . . . tough work, light work, tight work.

The 80 HP, nimble-wheeled 922 can work in 8-foot aisles, under 8¼-foot ceilings with safety and precision. Power shift transmission, power-boosted steering and brakes make the operator's commands take effect fast. The basic design of the 922, with the lift arms and the load ahead of the operator, gives him excellent visibility, confidence and safety.

There are 3 Cat wheel loaders, 80 HP, 105 HP, 140 HP (flywheel ratings), with the same wide-open design, same high production features. Your Caterpillar Dealer will be happy to show you the Cat loader for your material handling work. Call him soon.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.



Anywhere in the plant you're likely to see the 922 handling another job. Moving heavy ore up to the railroad crane is just another easy chore for the 922. Bigger production needs can be met with Cat's 944 or 966 loader.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**CAT LOADERS
FOR VERSATILITY
AND PRODUCTION**

hand, moves the goods by hand to the shelf, often in less than case lots. This is costly. It partly accounts for the food price paradox—the farmer and meat packer complain of low prices while consumers protest high prices.

Make Customers Work: It is fair to add that modern supermarkets hold prices down somewhat by the remarkable feat of making their customers work without pay. A supermarket is an order-picking line where the customer provides her own order-picking labor. She does the work a clerk once did. This has the additional advantage of cutting paperwork. The order is documented at the point of payment, with order writing and cash receipts as a simultaneous operation. There are no other records. Madam Housewife also transports the product from store to her kitchen. She never counts the cost of the order-picking or transport.

Department Store Contrast: In spite of its shortcomings, food distribution presents a fine pattern.

BYPASSING WAREHOUSES

(From an article by E. B. Weiss which appeared in Advertising Age, July 17, 1961.)

"... some giant manufacturers are beginning to wonder whether the time may soon be ripe when it will be mutually beneficial for them to bypass the chain distribution center and make direct delivery to retail stores.

"Under this kind of setup, the new distribution procedures might largely (not entirely) limit the chain's warehousing functions to medium-size and smaller suppliers and to the chain's smaller stores. The giant store units of the chain would then be supplied on a direct delivery basis (this would include delivery on pallets, where the merchandise can be moved this way—and those pallets may even be planned so that they actually become a type of store fixture, thus cutting store stock-handling costs to the bone)."

Compare this comment with Ralph Sims' suggestions.

Unfortunately it does not fit enough of our products. Compare what takes place in department stores. Department stores face the most complex, heterogeneous marketing problem in our economy. A typical department store sells everything from needles to custom-made sofas 30 feet long.

Store layout is set by merchandising needs, not by handling principles. On the street level of a typical store you find jewelry and cosmetics, the small, expensive goods. Second floor—better dresses, better hats, lingerie, and a travel shop... and so on to the upper floor where they have furniture.

Why should furniture and other heavy items be upstairs? The merchandiser explains that customers buying big ticket items know what they want and don't mind going to upper floors. If you route them past other departments displaying impulse purchase items, they may buy something. We can't argue against this merchandising logic. We wonder, however, how often a family buys a big ticket item, and whether they have time for impulse purchases during

such an excursion. Does it justify providing elevator equipment for raising heavy items to floors above the second?

And how about all those little standard items—stockings, gloves, lipsticks, etc.—which clerks must pull out of drawers and show to customers one by one? How about the practice of delivering a \$1.29 box of stationery to a customer 20 miles away?

Excessive Labor Cost: Department stores seem to run on the principle, no longer valid, that help is cheap. This is why they arrange their goods so it is necessary to have clerks at every counter and floor area. It explains why they still deliver minor items.

Inventory: The large inventories frequently found in department stores also suggest questions. Once big stocks were justified. The store attracted customers by having a large collection of distinctive merchandise, much of it made to order to suit the price requirements and tastes of the store's customers. To get products made to order the store had to buy in fairly large lots.

Today nationally advertised brands have largely displaced house labels. The department store's offering is no longer a distinctive collation. You can get the same products from a rival store or from a discount house. The department store can now buy in small lots, counting on quick stock replacement of standardized goods direct from the manufacturer or his distributor. Does the store any longer need a large warehouse?

These comments are not meant as barbs hurled at the struggling merchandiser. They are offered because they point out how merchandising practices mold the distribution pattern. We in material handling are responsible for delivering goods from factory to consumer

efficiently. Interpreted broadly this responsibility includes a duty to point out merchandising practices that increase handling costs unnecessarily.

Packaging: For the same reason material handlers are concerned with packaging. To deliver goods from the factory to consumers we must design packages which survive the rough handling of either the postal service or the freight truck. This same package must carry a favorable image of our company, identify the product, and show where the shipment goes. The package must also be designed for mechanical handling, protect against pilferage, and open easily.

Documentation in Distribution: For every package shipped there must be documentation. Usually the documents include shipping ticket, bill of lading, warehouse receipt, and a receiving slip. The shipment may go through many hands on the way from factory to consumer. At each stage of the trip new documents are prepared. The original shipper makes up the shipping ticket and bill of lading set. The

wholesaler writes a receiving slip, acknowledges acceptance of the product, and enters this information on his inventory records. When he reships the product he issues another bill of lading, another shipping ticket, and shows another transaction on his inventory records. The retailer receiving the goods then performs the paperwork connected with receiving, and probably uses internal requisitions tracing the goods from store warehouse and receiving department to the sales department and the floor. When a customer buys the product the sales slip relieves the inventory, and if it is a "send" the delivery service must get acknowledgement of receipt.

Work Adds No Value? It would appear that each step of this long, complex trip from manufacturer to consumer should accomplish something of value. In the first article of Project Upgrade (MATERIAL HANDLING ENGINEERING, February, 1961) we explained our view, that material handling adds nothing but cost, that time and place utility do not justify material handling costs. Economists dispute this point. They say handling increases value because it puts the goods on the consumer's shelf. The product, however, is unchanged from the last manufacturing operation to the time the consumer gets it. Only the mark on the price tag changes, and the amount by which it changes is distribution cost.

How Much of this Cost Traces to Obsolete Methods? Our distribution system was created to cope with the time lag between completion of manufacture, and the consumer's purchase. Wholesalers buy in job lots from the factory, enabling it to produce at an economic rate. They sell broken lots to nearby retailers, giving quick delivery and reducing the retailer's need for capital. Thus wholesalers' stocks are a cushion of time and capital between manufacturer and retailer.

Distribution Channels Shortened: This cushion between manufacturer and retailer is now less often needed. The current distribution revolution is unstuffing the cushion. Communications, inventory computers, rapid transport, make field warehousing less important in distributing most products.

Storage-in-transit is becoming a major factor in the distribution picture. For example, in the meat packing industry the packer loads and ships a carload of product, and while the car is en route salesmen sell its load. One large appliance manufacturer fills out incomplete truckloads with uncommitted merchandise. While the truck is on the way sales are added to the load manifest, and when the truck arrives at its destination its complete load has usually been sold.

This kind of operation requires rapid communication and tight control of inventory in plant, in transit, and in the field. It reduces inventory and speeds cash flow. If the goods in transit are considered part of inventory and remain under control of the shipper, they naturally reduce the need for inventory at both ends of the pipeline.

Unitization and Containerization: Another development of the distribution revolution is containeri-

zation and modular shipments. New mechanical handling systems unit load standard highway trailers. The idea of unitizing and containerizing is now being applied to all types of transportation. You can unit load a highway van inside your factory, haul it as an over-the-road tractor trailer unit to a rail siding, carry the van piggyback on the flatcar to the nearest seaport, load it aboard a ship (Lift-On, Lift-Off) for transport to a distant point, there transfer the van to another highway tractor at the dock, and deliver it to a point of use where fork trucks unload its contents directly into production. All the while the product has been wholly under control. It has been handled as little as possible, and it usually has been in motion continually. The same technique is being used for air transport, and in smaller modules for interplant, and intracity movements.

Improving Physical Distribution: The material handling engineer may recognize more opportunities for improving the handling of his product in distribution than he can find in his own plant. Nevertheless he concedes that, in distribution, merchandising techniques usually take precedence over functional activities of handling. For that reason packaging and handling methods must anticipate problems of the merchandiser. Also, the material handling expert will observe that the merchandiser devotes most of his attention to selling, and may accept without question methods of physical distribution and handling which are obsolete.

Combating High Distribution Cost: These facts explain much of the wasted handling and storage in distribution. The first step to take to combat excessive costs is to find the most effective units for protecting the merchandise, grouping it, and controlling it. Then press to eliminate the unnecessary steps in distribution. As we have seen, this might mean bypassing an intermediate warehouse, or even getting the consumer to take over the work of order-picking and delivery.

Act on the principle that the cost of distribution adds nothing to the value of the product. If we could telephone goods from factory to consumer, we'd no longer need distribution, and we'd have maximum efficiency. We're not that smart, but we can cut out steps in our systems. The quotation from E. B. Weiss shows one way this can happen. Another example is the method used by a hardware jobber: He has eliminated inventory, and handles only paper. He buys the merchandise, pays the factory extra for direct shipment to his customers by LTL and Parcel Post. His only expenses are for handling the paper and financing.

By perceiving similar opportunities the material handling engineer should be able to reduce the cost of distribution and save his company expenditures which are essentially complete waste.

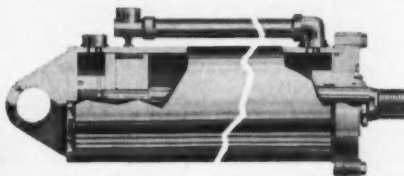
Be a Hero? These are examples of direct attack on the cost of distribution—a very wide and sensible approach. If you can conceive such direct and simple answers to distribution problems, or even less colorful solutions, you will be a hero to management. ♦

"TROJAN 404"* **muscled** **by** **Ward Hydronics** **cylinders**

Outstanding muscle and stamina are engineered into the business end of Yale and Towne's Trojan Tractor Shovel Model 404 at very low cost. It's done by using two standardized heavy-duty, double-ended, double-acting Ward Hydronics** cylinders to position and actuate the shovel bucket; two single-packed double-acting Ward cylinders to lift the arms. Outstanding for low maintenance, for freedom from twist or impact breakage, say operators. For engineering details, for quotations, write to Ward Hydronics Inc., Alden, New York.



*Trade name, Trojan Division, The Yale and Towne Manufacturing Company
**Trade name, Ward Hydronics Inc.



Two Ward Hydronics 9-inch diameter, 36-inch stroke cylinders lift 12-ton payloads with ease



Trucks, tractors, and loaders— versatile yard workers

MATERIAL HANDLING PLANNERS like to move a great, heavy mass at one time. Yard storage demands high flotation and high underclearance in its material handling equipment. The price you must pay is larger and heavier trucks. They may be less maneuverable, but for outside storage, this is OK.

Important workers in yard handling on unimproved surfaces are gas powered fork lift trucks, tractor-mounted fork lifts, and front end loaders with fork lift attachments. And pneumatic tire electric trucks have just been developed for yard work.

These trucks, tractors, and loaders handle:

- Unit loads, either on pallet or palletless.
- Building material usually is palletized for handling efficiency. So is lumber, raw and finished.
- Large items, such as containerization vans, pipe, rubber storage tanks.

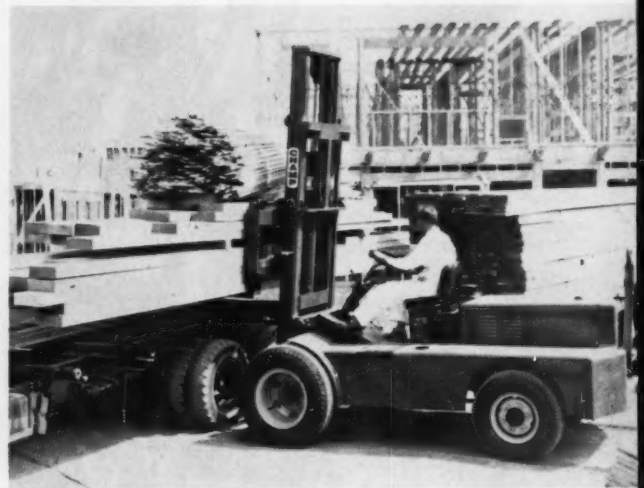
The photos show you various machines and methods. You will see handling with and without pallets. You will also see products put in racks.

"Today's Yard Storage Brings New Benefits" was an article in **MATERIAL HANDLING ENGINEERING**, January, 1961. It said yard storage is increasing, that some factories today have storage yards four blocks away. Compare 25 cents a sq. ft. for outdoor storage with \$8 inside, and you see why they can afford to travel.

The lift truck is extremely versatile when it uses the many attachments available. Lifting, moving, stacking, and storing are all done with unitized loads and with a lift truck often fitted with attachments.

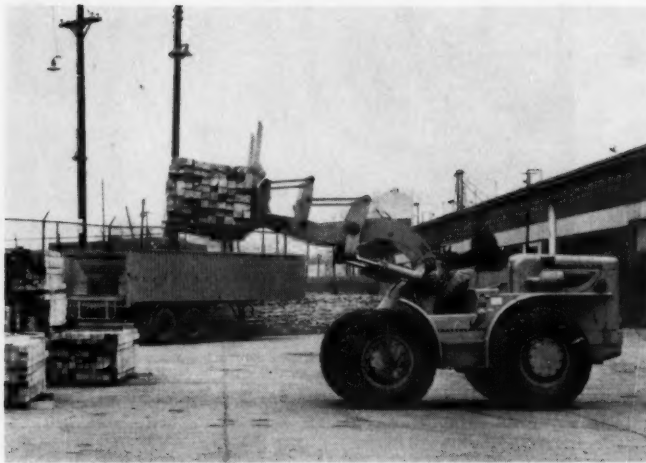


Massey-Ferguson



Champ Sales Corp





Caterpillar Tractor Co.



Gerlinger Carrier Co.



Erickson Power Lift Trucks, Inc.

HANDLING LUMBER

The tractor-mounted forklift can maneuver on nearly all sorts of ground mainly because it has big tires and high ground clearance. The wide-base pneumatic tires provide flotation for fast, efficient performance in outdoor storage yards, or on other unpaved areas. They answer the need for material handling equipment capable of traveling rough fields. Their price is a main advantage too.

A special advantage of a side-loading fork truck: you can get a license to run it over the road. You can pick up a load in the yard, drive over public roads, and deliver the material to a job without changing trucks.

Lift trucks today speed log handling regardless of surfaces. Twenty-inch wheels provide all-weather traction, better load flotation, more dependable braking. The trucks transport massive logs through foot-deep mire. Special attachments are pole-grabs and pulpwood loaders. One manufacturer that specializes in log handling trucks makes them up to 40,000-lb. capacity.

Another company recently made four major design changes to increase mill yard versatility in its 17-ton log stacker. Two of the improvements, longer forks and demountable tusks, permit handling of log loads up to 7 feet wide, also makes the stacker suitable for handling packaged lumber and prestressed beams. The front-mounted fork lifts also play an important role in handling crops of fruit and vegetables in the field.



Frank G. Hough Co.



Clark Equipment Co.

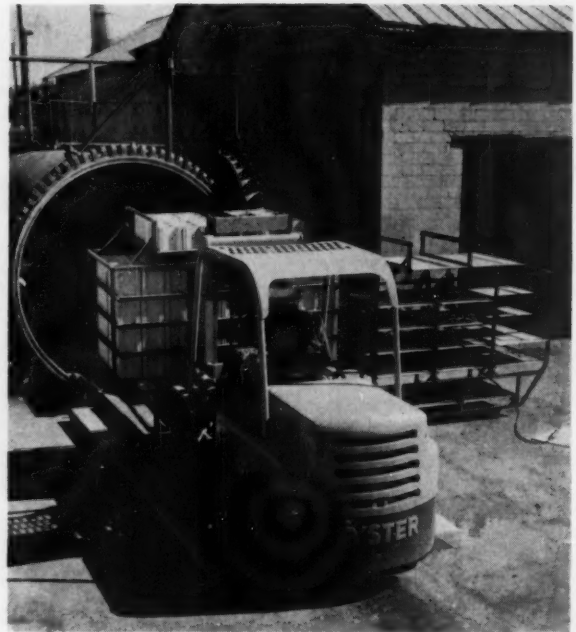
HANDLING UNIT LOADS

Industrial trucks, often fitted with attachments, handle and transport unit loads comprised of uniform rectangular packages. There are many methods, but they all handle batches of rigid or semirigid packages. These include corrugated, wood, metal, and plastic boxes or bottle cases.

A leading fork truck manufacturer just introduced his 5,000-lb.-capacity yard truck for handling concrete block.

"This rounds out our series. Before, they used a 4,000-lb. truck, or our 6,000-lb. truck. This new one fills the gap," a company engineer points out. Design and construction provide the ruggedness, compactness, and maneuverability for swift indoor and outdoor movements. You can have your choice of gasoline, LP-Gas, or diesel. Top speed 10 m.p.h. Large pneumatic tires and 4-wheel stability help assure safe movement of loads over varying travel surfaces. The truck will operate in intersecting aisles slightly more than 6 ft. wide.

The big items in yard storage today include containerization, retail lumber handling, concrete blocks, logs, prestressed concrete beams, building materials, drums, paper rolls, bricks, autoframes, castings, boats. Here you see many being handled in unitized loads.



Hyster Co.



American Road Equipment Co.



J. I. Case Co.



International Harvester



Yale & Towne Mfg. Co.



Motec Industries Inc.

HANDLING DIFFICULT LOADS

Unusual jobs demand unusual yard handling equipment, often call for special attachments.

Electric trucks with pneumatic tires have worked out extremely well at the Butler County Mushroom Farm, West Winfield, Pa. Butler asked the manufacturer for a truck that would handle tons of compost in trays over rough terrain and long runs in mine tunnels. The trucks drive $\frac{3}{4}$ to 1 mile down into the mine working areas, negotiate 18 percent ramps. The going is rough, vibration heavy. But power steering keeps shock from the driver, gives him easy control. The manufacturer rede-

signed the motor, added cooling capacity. A large fan circulates air over the motor. And there's special suspension on the rear wheels. In every sense, Butler's electric trucks have performed as true outdoor trucks. Most important of all, fumes no longer are a hazard in the mine.

Actually, few electric trucks are equipped with pneumatic tires. Another truck manufacturer provided a customer with an electric truck equipped with a drum handling attachment. He uses it in semipaved yard to handle drums of chemicals. The truck had to be electric because it had to be sparkproof.



Automatic Transportation Co.



Allis-Chalmers



Yale & Towne Mfg. Co.



The Heifred Corp.

Ford Motor Co., Tractor Division



HANDLING AWKWARD LOADS

Awkward loads do not thwart these material handling trucks that easily pick up long lengths of concrete pipe for stacking, loading, and shipping. The trucks maneuver quickly and safely in tight places too.

Gas-powered fork lift trucks today are built to withstand weather, and you can get them with cabs. They now come in larger capacities than was thought possible a few years ago. They're designed for outdoor work. Their better weight distribution gives them better flotation and increased traction over unimproved surfaces.

Power trains, particularly power-shifted transmissions using torque converters, are being used more in larger trucks. Standard transmissions are now synchronized for easier shifting, and they provide 2-speed high gear. This enables trucks to operate at higher speeds between jobs.

Power-assisted accessories, such as steering and brakes,

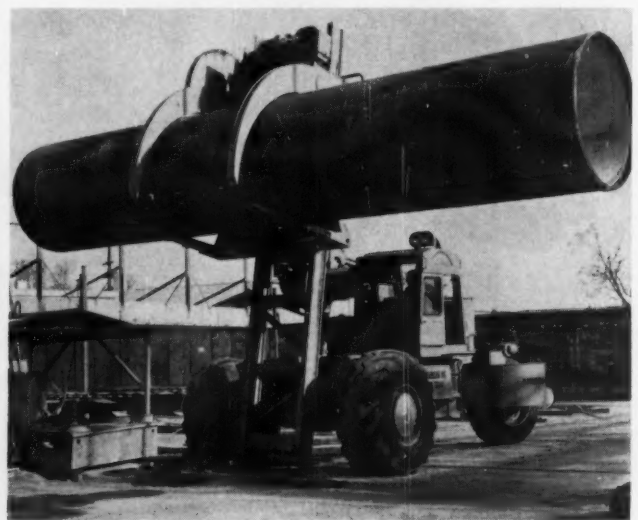
are also standard on many of the larger capacity models. These accessories make the trucks more efficient, help eliminate operator fatigue. Brakes, similar to those used in heavy mining and earthmoving equipment, are now being used on heavy capacity pneumatic tire lift trucks.

Truck manufacturers are prepared to build machines to do unusual jobs. The Dow Chemical Co.'s Midland Division converted from drums to collapsible rubber containers (upper left). This fork lift operation picture shows equipment with the boom attached. This special crane boom has a live load line. The load can be raised and lowered independently of boom operation.

Also pictured (lower right) is a 10,000 lb. capacity side loader operating over a gravel road in a rail yard. The long lengths of pipe handle easily. This truck can also be licensed for over-the-road operation. ♦



Silent Hoist & Crane Co., Inc.



R. G. LeTourneau, Inc.

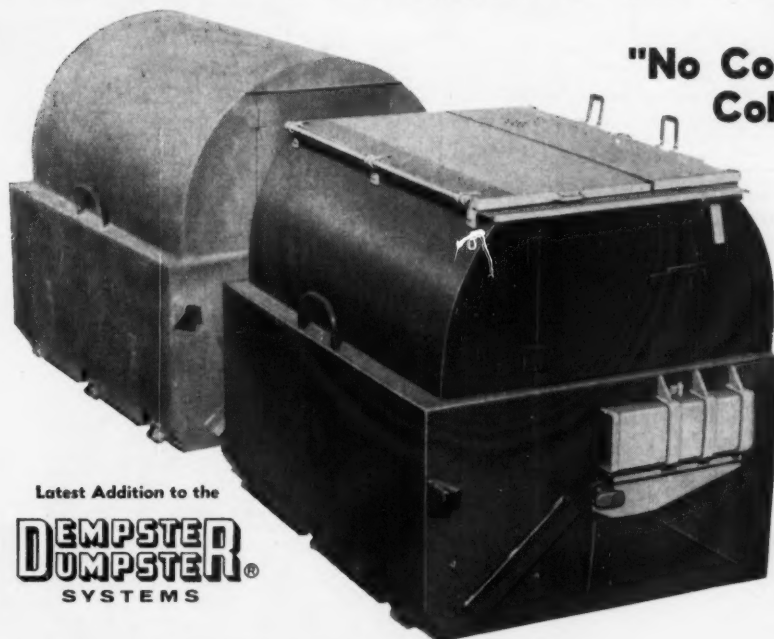


FWD Corp.



Baker Industrial Trucks

New SUPER DUMPMASTER Handles Converted DUMPSTER Containers...Beats Long-Haul Problem



Latest Addition to the

DUMPSTER
SYSTEMS

Owners of DEMPSTER-DUMPMSTER Systems who now face long haul problems due to movement of disposal areas may now convert from their present "container haul" system to the new SUPER DUMPMASTER "no-container-haul" system without abandoning their investment in DUMPSTER Containers.

The SUPER DUMPMASTER makes its rounds to each converted container, mechanically empties the contents into its 30 cu. yd. packer body and compacts the material to a fraction of its former volume with the 85,000 lb. force of its packer plate. Rather than haul each container to the disposal area, the SUPER DUMPMASTER carries the contents of many containers on each trip, cutting collection costs drastically.

Write Today for FREE BROCHURE
DEMPSTER BROTHERS
Inc.
DEPT. MH-9 KNOXVILLE 17, TENN.

"No Container Haul System" Collects Refuse on Spot

If longer trips to disposal areas have raised your operating costs, a small investment in conversion kits protects large investments in DUMPSTER containers. The Super DUMPMASTER handles converted DUMPSTER containers up to 12 cu. yd. and all DUMPMASTER containers one thru 12 cu. yd.



Mfd. Only By
DEMPSTER BROTHERS
Inc.



The SUPER DUMPMASTER engages container.

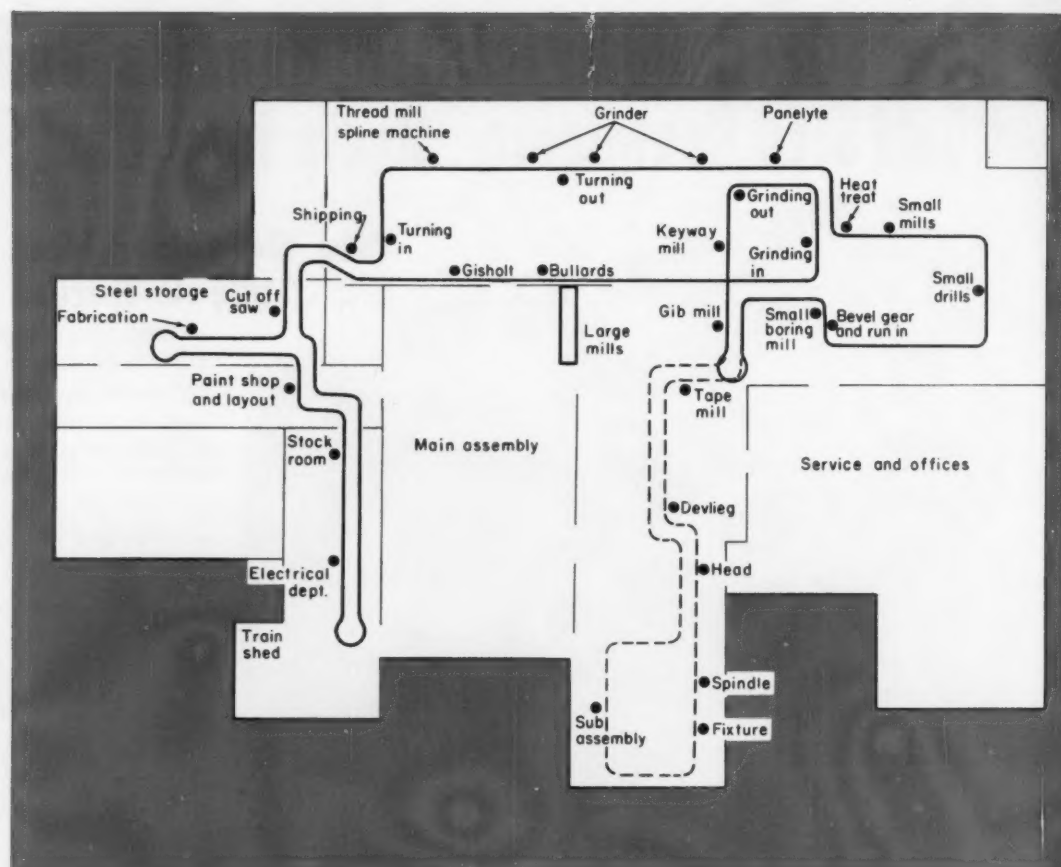


Clearance arms carry it toward hopper opening.



Container is rotated, emptying contents into the compaction body.

Circle 26 on Reader Service Card



DRIVERLESS TRACTOR stops at any of these stations, responds to button on tractor control panel or to switch at station. Ingersoll plans to extend route (dotted line) into subassembly area.

Intelligent tractor does

A DRIVERLESS TRACTOR-TRAILER TRAIN—it never takes a coffee break—paid off handsomely at Ingersoll Milling Machine Co., Rockford, Ill. Direct savings: \$35,000 a year. Indirect benefits: the workers remain on the job, doing what they're paid to do.

Ingersoll builds large, individually-designed machines. They may cost \$1 million, weigh 625 tons.

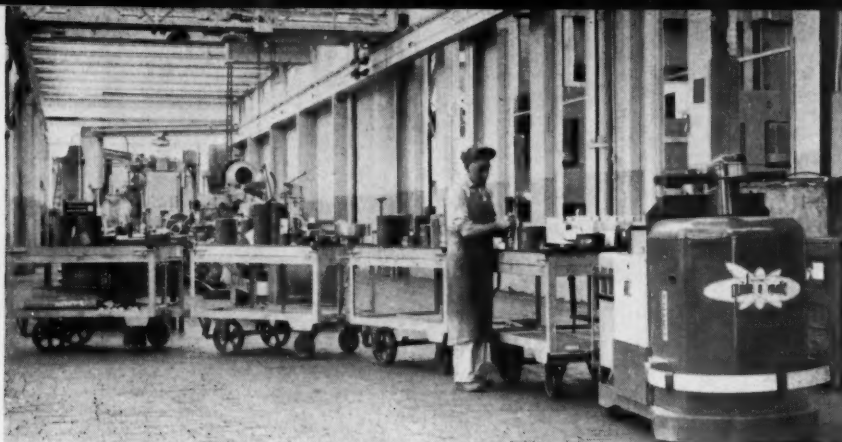
W. W. Dewey, material handling engineer, told a visiting MHE editor about Ingersoll's former methods. Seven drivers used to wheel three large crane trucks from station to station. Workers handled subassemblies and castings weighing more than a ton by hitches (sling and hoist pickup). There was lifting from the truck, to machines, out of machines, to the inspector—perhaps as many as 12 hitches.

New system. The driverless train with trailers cut hitches to two—into the machine station and out. The

trailers not only transport goods but serve for temporary storage, also replace stationary tables and platforms. Another advantage: there's a mailbox on the tractor, handy for sending mail, drawings, instructions, job cards, and absentee reports around the shop.

Where it goes. The train runs along a fixed path of electrical current provided by an insulated wire sunk $\frac{1}{4}$ inch deep into the wood block floor. It takes only a saw to make the slot. The diagram shows the route through light and heavy machine shops, storage areas, and subassembly. Ingersoll plans later to send it through main assembly, adding six stations.

There are two varieties of train stops. 1) The tractor can be set to stop for 75 seconds at any of 19 places and toot its horn for attention. 2) Or, the worker trips a switch at a fixed station. This automatically stops the train at that point.



FLASHING RED LIGHT (left) warns of tractor's approach. Sensitive bumper jams on brakes if the tractor touches anything. Worker (below) pushes station switch to stop the train. Notice simple trailer hitch. Tractor carries own charger, makes battery recharging simply a matter of plugging in.



TRACTOR-TRAIN (out of sight in foreground) delivers work to lathes. Work pieces go on conveyor at right. Workers push them to lathes (portable conveyor as a bridge), finish the pieces, deliver them to conveyor on left of area. Work is shoved to inspection at far end, picked up by train for trip to next department. Train runs down left aisle.

just what it's told

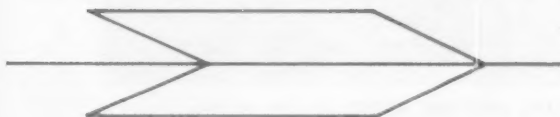
The tractor may pull as many as four trailers, 2,500-lb. capacity each. A double deck trailer is 36 inches high with roller top, same height as the firm's floor conveyors—for easy transfer. Trailers have three hinged rims that raise and lower. Workers are cautioned to fasten rims up before the loaded trailer is sent on. Ingersoll also uses low flatbed trailers for large castings. Both trailers have the same wheel arrangement: two large fixed wheels and two swivel casters.

Some other features. Trailer rollers have a brake to keep heavy material from sliding around. The tractor has two brakes—normal to ease the train to a stop, and emergency, which work from the front bumper. A touch and the train jams to a halt.

The train covers a route of 3,354 ft., better than 6/10 of a mile. It circles approximately twice an hour.

The worker easily hooks on his trailer, sends the load to another station by pushing a switch on the tractor panel. Each station on the panel is named instead of numbered—to prevent errors in destination. Dewey says the workers easily remove a load, hook on another, and pick up their mail in 60 seconds.

Wiring diagram of a fixed station looks like this:



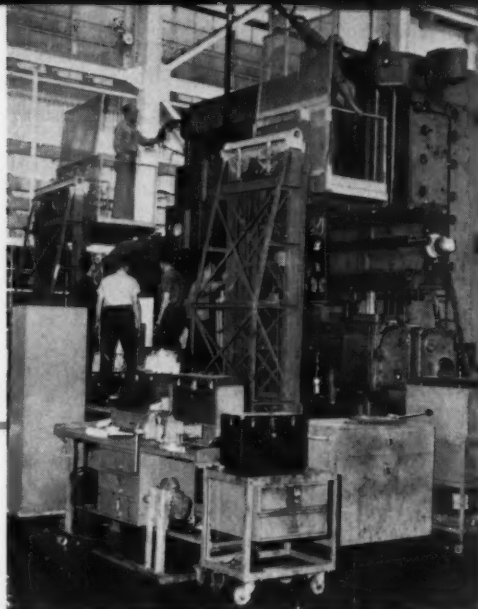
Trip the switch and the current flows into the outside wires, away from the tractor's sensing unit. This stops the tractor. The power continues, of course, because you can't stop the system or the tractor never would arrive. You send the tractor on by pushing a

switch that shoots power through the center wire.

Ingersoll keeps on hand some 200 trailers. Dewey estimates about 60 change locations during an ordinary 8-hour shift. If the train is filled up and a worker wants to attach a trailer, he just waits until the next trip, hopes there'll be room for his load. ♦

For technical information, MHE thanks the Barrett-Cravens Co. and the Nutting Truck and Caster Co.

Big handling for big machines



ELECTRIC PORTABLE ELEVATORS lift workers to top of large machines for wiring and assembly on main assembly floor, where there's more than 40 ft. between crane hook and floor.

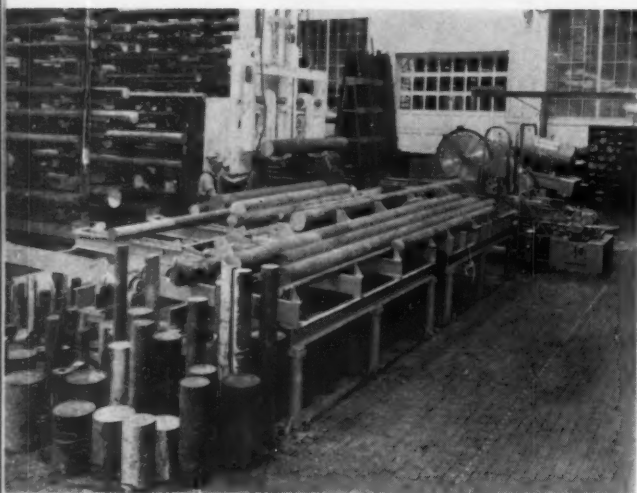


PLATE AND BAR STOCK receiving revolves around a 5-ton stacker crane. It feeds rolled stock into racks (top), also picks from racks, positions stock on feed table of specially-designed Ingersoll automatic cutoff saw. Vacuum plate stacker crane attachment (below) lifts steel plate (up to 10,000 lb.), places it in rack. This does away with space-wasting floor stacking. Stacker delivers plate to flame cutter, shears, press brake.



FIFTY-TON BAY CRANE (Ingersoll has two) lifts heavy portion of machine into place. Assembly floor has pit for undersides of machines that extend below the floor. Ingersoll makes the largest milling machines.



STOCK ROOM loads rack on order, holds until called for. Lift truck with clamp attachment carries loaded rack to point of use. This keeps worker at job instead of running back and forth to stock room—makes stock room, not the work station, an accumulation point.



WHEN THE DRIVER PUTS HIS FOOT DOWN

An industrial truck operator's foot is a highly important part of his job. On a conventional truck, his right foot is busier than that of a pipe organ player, especially on tight maneuvering.

Hyster has perfected a control system that lets the driver move his truck forward or back, speed up or slow down, and the only control motion is a three-inch shift of his right toe!

He does it with a Hyster exclusive called "Mono-

trol." The physical evidence is a wide rubber pedal on the floorboard, and forward-reverse indicator lights on the dash. The proof of its value is on the balance sheet, in the form of money saved through more work, more safely performed, in less time.

If your company has a job for materials handling equipment, it will pay you to check on Hyster's Monotrol-equipped lift trucks. Your dealer has the proof that Hyster is the line that sets the engineering pace for all lift trucks.

INDUSTRIAL TRUCK DIVISION — Lift trucks and attachments, mobile cranes, straddle carriers
TRACTOR EQUIPMENT DIVISION — Construction and logging equipment; Heavy-duty trailers
INTERNATIONAL DIVISION — Overseas truck and tractor manufacturing, sales and service

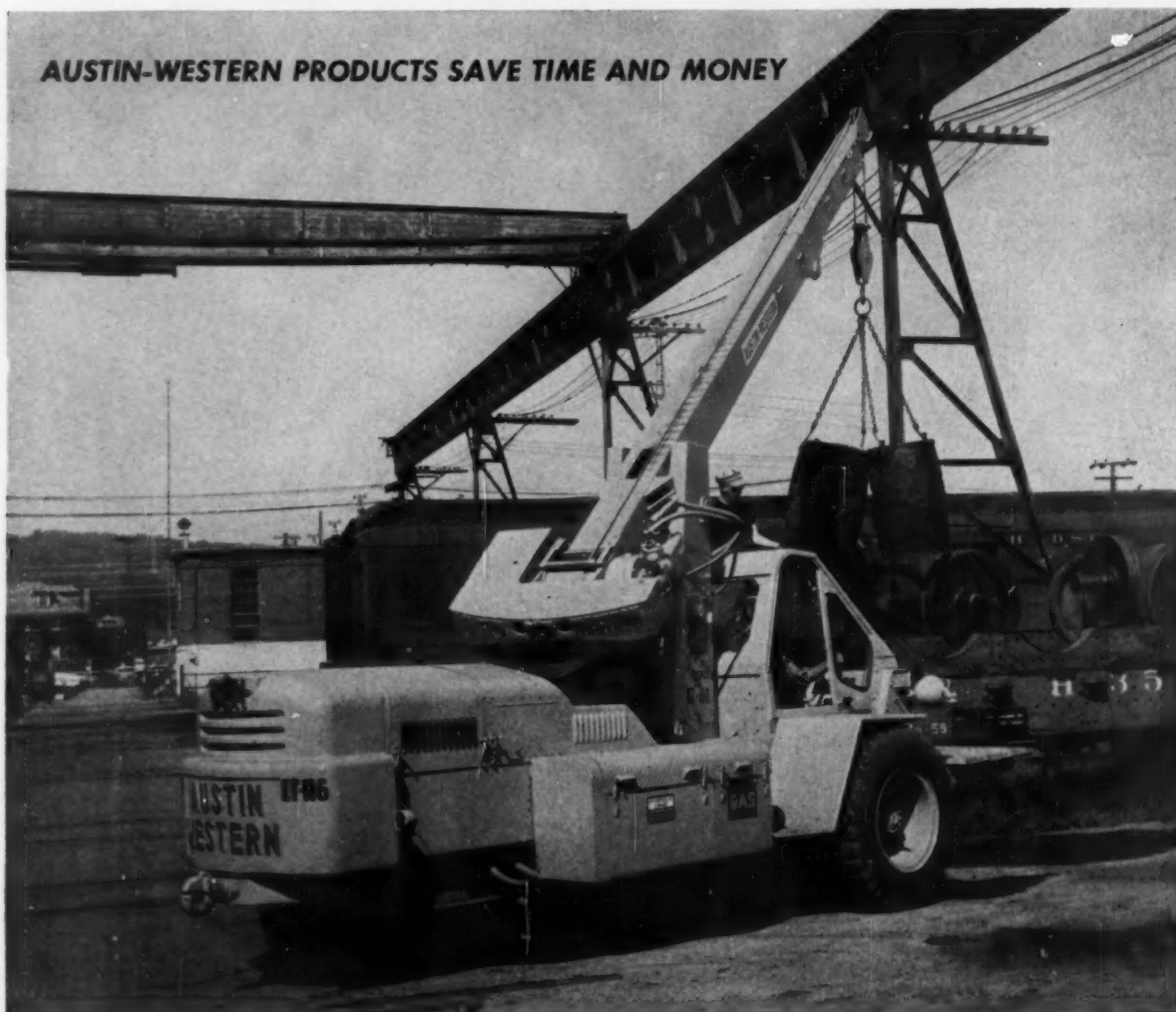
Manufactured in: Portland, Oregon (Home Office) • Danville, Ill. • Peoria, Ill. • Kewanee, Ill.
Australia • Brazil • England • France • The Netherlands • Scotland • Republic of South Africa



HYSTER COMPANY
INDUSTRIAL TRUCK DIVISION
P. O. Box 847 • Danville, Illinois

Circle 52 on Reader Service Card

AUSTIN-WESTERN PRODUCTS SAVE TIME AND MONEY



Safe, fast, profitable way to lift, carry or place any load in 5-ton range

It's Austin-Western's economical new 3-wheel hydraulic crane! This versatile Model 110 is your answer to the limitations of fork lifts and conventional 3-wheel cranes. Why? Because of its 18-ft. 7-in. telescoping boom and 220° swing. The 110 can actually outlift all other 3-wheel cranes over-the-side. Its low 8-ft. 10-in. overhead clearance and the easy maneuverability of its dual tire,

rear trunnion power steering permit it to work in even the tightest quarters with ease.

Other time and money saving features include dual front driving wheels; road speeds from 2 to 18 mph. Torque converter and full hydraulic reversing mechanism are standard. The 110 can be adapted to your particular job needs with various combinations of

features and equipment. And it's designed and built for easy, economical, troublefree maintenance.

Why not take a good look at this versatile new piece of materials handling equipment. Ask your Austin-Western distributor for a demonstration or write us for details.

**A-W hydraulic cranes are available in
5 models; capacity ranges from 5 to 11 tons!**

Austin-Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

Circle 4 on Reader Service Card



NEW **ELPAR** "SPARTAN"

"EXTRA" SERVICE FORK TRUCKS

This hefty new model is built to take it! With the *extra* margin of strength and stamina built into this new ELPAR F-52T "Spartan", you get the reliability and maintenance-free service that you always expect from top quality ELPAR trucks.

The "Spartan" is available in standard capacity ratings of 10,000, 12,000 and 14,000 pounds. Call your ELPAR man for complete details.

*Free bulletin gives
complete "Spartan" story.
Ask for your copy now.*

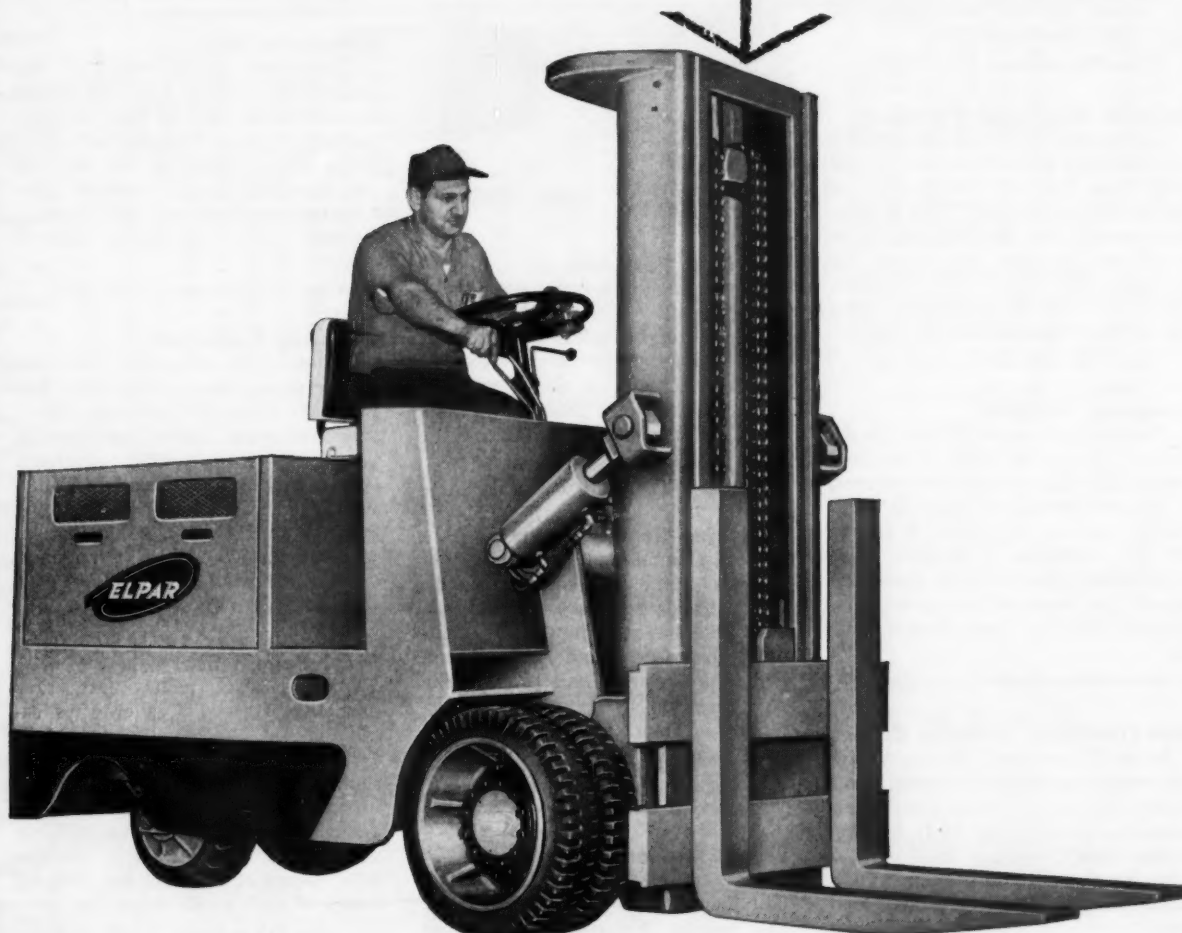


THE **ELWELL-PARKER** ELECTRIC COMPANY

4231 ST. CLAIR AVENUE • CLEVELAND 3, OHIO
In Canada: International Equipment Company, Ltd.

10 MOST WANTED FEATURES

- Unitized hydraulic control panel
- Demountable electrical control panel
- Twin tilt cylinders—High mounting for stability
- Power steering standard
- Engine hour meter standard
- Battery compartment takes 1280 AH battery
- Pivots around drive wheel on turning
- Can be used for car loading when handling up to 48" square pallets
- Travel speed up to 6 MPH loaded
- Lift speed 32 FPM loaded



Circle 32 on Reader Service Card



BULLETINS CATALOGS FILMS

Power-&-Free Conveyors

Bulletin 2365 explains what you gain from power-and-free overhead conveyors (trolley is propelled either by tow-chain or by gravity). Shows details of trolley, pusher, station selector, switch, trolley stop, retarder, and automatic feeder. 6 p. *Rapistan-Keystone Inc.*

Circle 301 on Reader Service Card

Expendable Pallets

"SAVE" explains how to use expendable fiberboard pallets for unitizing loads of bags and cartons. Includes diagram for grinding chisel on forks to pick up "Poke-Pak," and illustrates attachment for push-pull ("Glide-Pak") type. Also suggests using tuck-in flap for advertising display copy. *The Mead Corp.*

Circle 302 on Reader Service Card

Powered Conveyor Handbook

Engineering handbook and catalog tells you how powered conveyors are used, what they are, design features you should know about. Then it gives engineering data for figuring your needs, and explains how to do the figuring. Indexed so you can find data easily. It's a book you'll save. Two colors, 88 p. *Lamson Corp.*

Circle 303 on Reader Service Card

Compares Weights

Shadowgraph scales tell you whether item is over or under a standard weight. Uses sharp shadow as pointer; it reduces friction, is easy to read. Eleven models, capacities 2 oz. to 100 lb., described in bulletin. Also model which gives readout in electric signals, for automated checkweighing. Catalog 3333, 8 p. *Exact Weight Scale Co.*

Circle 304 on Reader Service Card

New Overhead Traveling Cranes

Series D overhead electric traveling cranes are standard catalog items though big, ranging from 3 to 25 tons capacity, with spans to 80 ft. Catalog covers cranes, bridges, trolleys, motors, controls, optional equipment. Gives dimensions, specifications. Good extra: with the illustration of each

improved feature, catalog shows line drawing of ordinary construction, so you can see difference. Bulletin 15005-1B-61, 2 colors, 20 p. *Manning, Maxwell, & Moore, Inc.*

Circle 305 on Reader Service Card

Chain and Sprocket Drives

Power transmission plans and ideas are theme of big new catalog on roller chains, sprockets, can conveyor attachments. Engineering section gives 35 ways to adjust chain on moveable sprocket center drives and fixed sprocket center drives. Includes prices. Catalog 8, 106 p. *Acme Chain Co.*

Circle 306 on Reader Service Card



Big, New Fork Lift

Specification sheet describes eight models in new series of heavy-duty fork lift trucks. Capacities range from 5 to 12 tons. They are powered by gasoline, LP-gas, or diesel engines. Sheet also includes data on 9 larger units, with capacities from 12 to 22½ tons. *Towmotor Corp.*

Circle 307 on Reader Service Card

Tools for Rayon Strapping

New manual and pneumatic tensioners, and new sealers for use with rayon strapping presented in bulletin. Also describes strapping, seals, strapping dispensers, and polyethylene corner protectors. Chart gives tensile strength, elongation, and energy required to break, for both rayon and steel strapping of same width. Two colors, 4 p. *American Viscose Corp.*

Circle 308 on Reader Service Card

Shreds Cartons, Paper Scrap

You save 90% on waste handling cost by using shredders described in this bulletin. Floorsweep design has

feed opening 36 in. wide; carton and sheet models take 58 in. widths. Mal-leable iron knives go 2 to 5 years without resharpener. Makes no dust. Bulletin 611, 6 p. *Blower Application Co.*

Circle 309 on Reader Service Card

Straddle Carriers

Folder covers 15 models of self-propelled and truck-drawn straddle carriers with capacities ranging from 3 to 50 tons. Pictures show carriers in use, moving steel, concrete culverts, pipe, boats, weldments, etc. Includes capacities, dimensions for each model. Form 101-61-1500, 4 p. *Travelift Div., Drott Mfg. Co.*

Circle 310 on Reader Service Card

Automated MH

"Automated Material Control" discusses why material handling should be automated, how to start an automation program. Explains how electronic data processing fits in, and cites examples of applications in warehousing, manufacturing, and shipping. Bulletin GEA-7130, 8 p. *General Electric Co.*

Circle 311 on Reader Service Card

Vibrating Conveyors

Bulletin 615 illustrates exclusive rubber spring mounts and drive featured on General Kinematics vibratory conveyors. Drive automatically adjusts to load weight. Includes charts for selecting drives and trough size for handling materials weighing from 10 to 120 lb. a cubic foot, at speeds from 1 to 100 tons an hour. *General Kinematics Corp.*

Circle 312 on Reader Service Card

Steel Pallets Stack

Welded steel pallets last, save maintenance, save 5 other ways explained in bulletin. Two models, 1,200 and 3,000 lb. capacity; 15 standard sizes, 30 in. x 42 in., to 48 in. x 60 in. For stacking there are detachable cornerposts, or end or side frames. Sizes, weights, designs fully described in Bulletin 960, 2 colors, 4 p. *C.E. Robinson Co.*

Circle 313 on Reader Service Card

READER SERVICE CARD

Material Handling Engineering

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CITY					ZONE					STATE																
ADVERTISERS										COST CUTTING IDEAS																
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2	17	32	47	62	77	92	107	122	137	152	167	182	197	212	302	314	326	338	350	362	402	414	426	438	450	462
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Material Handling Engineering

BULLETINS CATALOGS FILMS

Wheeled Ramp is Portable Dock

Mobil-Board is 30 ft. long, supported by wheels at middle, forms a dock for loading trucks or freight cars anywhere. Has swivel fitting at end so truck can maneuver it. Picture in 6-p. bulletin shows how it is used. *Conrad Equipment Co.*

Circle 314 on Reader Service Card

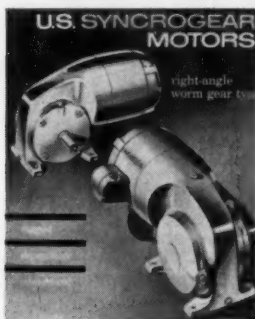
Fast Air Valves

Light-weight poppet-type pistons open and close valves fast, give quick response to control by solenoid, bleeder, or pilot. Made of corrosion resistant materials. Bulletin BR6-6532 shows mountings, dimensions for 8 models. *Acro Air Associates.*

Circle 315 on Reader Service Card

Gear Motors

Large cutaway illustration in Bulletin F-1971 shows how Synchrogear gearmotor is put together, explains by



picture how rotor and worm gear operate on one shaft with ample gear lubrication. Also gives ratings for single and double reduction types at speeds of 3.25 to 230 r.p.m., in sizes from 1/8 to 2 h.p. *U.S. Electrical Motors, Inc.*

Circle 316 on Reader Service Card

How to Manage Material Flow

"New Ideas in Material Management" shows how to find situations where you can cut material handling costs. Discusses typical opportunities for economy in manufacturing, wholesaling, and retailing. Pictures illustrate problems, their solutions. Show how equipment helps you put principles

into practice. Recommended reading. Bulletin 2800, 2 colors, 16 p. *The Rapids-Standard Co. Inc.*

Circle 317 on Reader Service Card

Doors for MH Needs

Elevator doors with "truckable" sills that give good support to industrial truck wheels, and doors for vertical conveyor shafts described in 12-p. catalog. Gives construction details, architectural specifications. *The Peele Co.*

Circle 318 on Reader Service Card

Glamour Plastics

"Eight New Glamour Plastics" gives properties of acetal (Delrin), polycarbonate, ABS, polypropylene, high density polyethylene, chlorinated poly-

ether (Penton), Nylon 6, and FEP. Charts thermal properties (conductivity, expansion, useful temperature range, heat distortion), density, impact and tensile strengths, Young's and flexural moduli, coefficient of friction, resistance to corrosion, comparative cost. 4 p. *Cadillac Plastic & Chemical Co.*

Circle 319 on Reader Service Card

Crusher

Do you need to crush wet and sticky clay or shells, without having trouble with plugging and caking? Read about a crusher that does it, handling 100 tons an hour, in Bulletin 6020. Two colors, 6 p. *Pennsylvania Crusher Div., Bath Iron Works*

Circle 320 on Reader Service Card

Continued on next page



BOILER PLATE HANDLING PROBLEM ...solved for Grand Rapids Boiler Works by

"It does the job quick and easy" says plant foreman Charles Storms. Pictured is MagnaLift holding a 6' x 12' sheet of 1 1/4" plate suspended for marking of cut-outs by Al Walters, at the hoist controls.

You can use MagnaLift anywhere—as a battery-powered unit or powered from an A.C. line. You can put the power pack on the magnet or place it elsewhere for remote control by extension cable. However you use it, you'll find MagnaLift one of the most useful lifting tools you've ever had! Send for all the details today.

Model LM4 (2 ton), \$385.00
F.O.B. Big Rapids, Mich.

MH-91

Dealer inquiries invited

MagnaLift
battery-powered
LIFT MAGNET



capacities

1-TON
and
2-TON

3 Interchangeable Power Packs

12-Volt Battery . . . 12-Volt Battery with
Variable Holding Power . . . 110-Volt A.C.
with Built-in D.C. Rectifier.

Hanchett MAGNA-LOCK CORPORATION BIG RAPIDS, MICHIGAN, U.S.A.

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D&M CANVAS CAB ENCLOSURES



**RETAIN FULL PRODUCTION
IN ANY WEATHER OF YOUR
FORK LIFT
TRUCKS, TOW
TRACTORS AND
BULLDOZERS
NOW AT
REMARKABLE
LOW COST**

- **QUALITY CONSTRUCTION**
Heavy army duck canvas which is waterproof and mildew-proof. Can be rolled up in mild weather.
- **VISIBILITY & SAFETY**
Clear vision assured by windshield and left, right, rear and roof panels of unbreakable glass. Screen insert in rear checks carbon monoxide. We can also furnish this with safety glass windshield and electric windshield wiper on request.
- **EASY TO GET IN AND OUT**
2-way zipper can be opened from inside or outside. Will not rust, freeze or corrode.

WHEN ORDERING
When ordering give make, model, capacity and specify whether machine has factory guard or LP gas tank.

FRAMEWORK
Framework custom made for you if your machine is not equipped with factory guard.

D&M
TRUCK TOP COMPANY
12186 PETOSKEY AVE., DETROIT 4, MICHIGAN

Phone WE 3-1613

BULLETINS CATALOGS FILMS

Scale for Packing by Weight

New scale is for checkweighing, filling, counting, issuing predetermined quantities. Has 5-lb. capacity. Photos in Bulletin 2112a show various indicator dial positions, drawings help you select platform or scoop you need. *Toledo Scale Co.*

Circle 321 on Reader Service Card

Cost Analysis

To get actual costs for operating personnel and load carriers Cushman interviewed 55 users. Bulletin T-100 reports results—averages from the whole survey, and details from 28 of the interviews selected at random. Averages were: cost of gas and oil—1.18 a mile; cost of maintenance and repairs—1.15 cents a mile. *Cushman Motors.*

Circle 322 on Reader Service Card

Largest Fork Trucks

Thirty and 35-ton capacity general purpose fork lift trucks (rated at 48-in. load center) are for steel yards, lumber mills, outdoor work. Dual controls facilitate forward and backward movement. Bulletin SS-2045 describes performance, design, dimensions. *Clark Equipment Co.*

Circle 323 on Reader Service Card

Continued on page 86



FIRST LOW-COST DOCK WITH 4-WAY LIP ACTION

New Hartman Retract-O-Matic ends truck positioning problems . . . lets you handle any trailer or load. Lip extends up to 24" to proper length for individual truck and load. Saves time, saves labor because trucks can be positioned anytime without attendant . . . serviced at dock operator's convenience. Ruggedly designed, easy to operate, 100% safe in cross-over and roll-over positions. Supplied completely self-contained, ready to install. **FREE BULLETIN** on Retract-O-Matic — send for it.

ATTENTION REPRESENTATIVES
Several territories still available.
Write for full details.

Hartman
METAL FABRICATORS, INC.
1124 Main St., Waterloo, N.Y.

Circle 49 on Reader Service Card

this PAYLOADER® operator runs



entire batching-mixing plant

Consumers Cooperative Association, Kansas City, Mo., operates a dozen bulk fertilizer plants in a nine-state area. Each plant mixes fertilizer—from a ton to a truck-load—to the customer's specifications while he waits. The entire process is operated by one man from the seat of a "PAYLOADER" tractor-shovel.

This fast, accurate and efficient cycle begins with the "PAYLOADER" and its precise, hydraulic bucket control with which the operator takes the separate ingredients from their bins and weighs each one into a 1-ton scale hopper. By means of air-control valves and push-buttons grouped within his reach, he dumps the hopper, elevates the batch to the mixer, starts the mixer and dumps the fertilizer through a chute into the waiting truck.

As soon as the scale hopper is emptied, he loads it with another batch so that the process is practically continuous, and up to 20 tons of fertilizer can be mixed and delivered per hour.

Your Hough Distributor has a "PAYLOADER" size — up to 12,000 lbs. operating capacity — to fit your job, plus the finest service and parts facilities in the business.

HOUGH®



THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS



SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.

731 Sunnyside Avenue, Libertyville, Ill.

- ☐ Send data on HA "PAYLOADER"
☐ Send data on larger "PAYLOADER" units

Name _____

Title _____

Company _____

Street _____

City _____

State _____

9-A-4

Take a new look at LP-Gas...



LP-Gas is the clean, dry fuel that's easy on an engine. There's no dilution of oil, no sludge, far less engine wear. Engines give 2 to 3 times the normal operating hours between overhauls. You often use the same oil 5 to 10 times as long. You get 2 to 4 times the spark plug life. There's virtually no carbon monoxide—no fume problem. And LP-Gas is completely safe and low in cost. Conversion is easy. Write today for new 20-page booklet on industrial uses of LP-Gas, to: National LP-Gas Council, 1515 Chicago Ave., Evanston, Ill.



Circle 81 on Reader Service Card

BULLETINS CATALOGS FILMS

Crane Outriggers

In 3 minutes you can attach wheeled outrigger to your truck crane, increase long-reach load capacity 400 percent. Wheels pivot so crane can be steered when moving. Folder shows outriggers, use in handling airplanes, box-cars, structural steel and concrete. *Crane Products Mfg. Co.*

Circle 324 on Reader Service Card

Fabricate MH Equipment

Parts for hydraulic lifts, dockboard components, lift truck mast channels can be made to your requirements—maker promises to make 2 pieces, or 2,000, as you require. His facilities for welding, forming, machining, heat-treating described in Bulletins SP-425 and SP-660. *Youngstown Steel Car Corp.*

Circle 325 on Reader Service Card

Nailing Guns

By using magazine-fed nailing tools you can increase production up to 500 percent in building or repairing crates and pallets. Tools that do it shown in 16-p. Catalog B-115. Guns drive nails, pins, staples, mostly by air-power; some are muscle-powered by means of a mallet. *Spotnails, Inc.*

Circle 326 on Reader Service Card

Continued on page 88

RESISTS HEAT, CORROSION, OILS, SOLVENTS

NO DAMAGE FROM NAILS OR STRAPPING

SELF TRACKING... NO STRETCH



ARMORBELT

UNITIZED ALL-METAL BELT CONVEYOR

GIVES MORE PERFORMANCE FOR YOUR MONEY!

Only Armorbelt gives you all the features you need for longest conveyor life under the toughest operating conditions. On production lines, for multi-level conveying, and for conveying through ovens or cold rooms, Armorbelt gives steady performance where others fail. And, its 4 1/4" body depth is completely enclosed for safety and cleanliness.

10 foot sections can be connected to make any conveyor length up to 500 feet—widths from 6" to 96". Get the complete story today.

WRITE FOR CATALOG #17



M-H STANDARD CORPORATION

515 Communipaw Ave., Jersey City 4, N. J. HE 3-5834

Circle 63 on Reader Service Card

MATERIAL HANDLING ENGINEERING



Container manufactured by Owens-Illinois

For ton-and-a-half oil heaters—

Giant Bostitch-stapled carton slashes packing costs 50%

Texsteam Corporation, Houston, Texas, used to ship 3000-pound oil heaters in wood crates. Each crate was built around a heater and was the size of a small room... seven feet long, seven feet high and three feet wide. Crates were costly to make and to ship. They were heavy, time-consuming to build and hard to handle. Here's how Bostitch helped.

An unusual—and unusually large—

corrugated container proved to be ideal. It's a sleeve with a Bostitch-stapled seam. A cap, stapled in place, forms the top. The burner is bolted on a wood pallet, then sleeve and cap go over the burner. A heater can be packed in a fraction of the time.

Texsteam reports savings of 50% for the new container over the old. The new carton weighs less and has cut freight costs substantially. Shipments

have been completely damage-free.

Texsteam gained many advantages and worthwhile savings in the change to Bostitch-stapled containers. Many companies do. If you would like to know how a change might benefit you, talk to a Bostitch Economy man. To call him, look under "Bostitch" in your phone book. Or write us direct. See how much you can save when you use Bostitch in your shipping room.

Fasten it better and faster with

 * **With every Bostitch machine you get...** *
 * the right combination for your needs from 800 staplers *
 * and over 200 staples... nation-wide parts, service and *
 * technical aid backed by the industry's most modern factory *
 * ...assurance that Bostitch products will operate to *
 * your complete satisfaction. *



709 BRIGGS DRIVE, EAST GREENWICH, RHODE ISLAND

Circle 11 on Reader Service Card



RAYMOND
New
Pallet Handbook

FREE 16-page booklet tells how to select, load and handle pallets; how to estimate pallet requirements; plus ways to increase your present warehouse capacity as much as 50%. Send for your free copy today!

of PALLET HANDLING

Published in the interest of better pallet handling by **RAYMOND**

The RAYMOND CORPORATION
3324 Madison St., Greene, N.Y.



RAYMOND
Lightweight
Hand Pallet Truck

Frees power trucks for stacking and continuous operation. Invaluable for intermittent handling on docks, trucks, elevators, etc. Easy rolling, operates in tight spots. Completely hydraulic. Built for years of use and abuse.

Capacity:
2,000 and 3,000 lbs.
Send for bulletin.

The RAYMOND CORPORATION
3320 Madison St., Greene, N.Y.
Circle 91 on Reader Service Card

BULLETINS CATALOGS FILMS

Jib Cranes

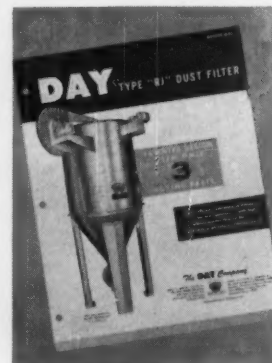
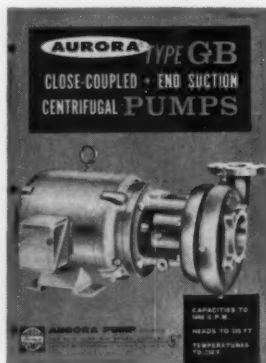
Catalog shows wall-bracket and mast-type jib cranes, and make-a-jib-crane-yourself fittings. Gives complete dimension specifications for tie-rod supported wall-bracket cranes of ½ to 3 tons capacity, and for 360-degree rotating floor-mounted mast types. Catalog illustrates units, typical installations. Two colors, 8 p. *Abell-Howe Co.*

Circle 327 on Reader Service Card

Centrifugal Pumps

Bulletin describes new close-coupled end suction centrifugal pump suitable for handling liquids. Capacities to 1,600 g.p.m., heads to 330 ft. Bulletin 108, 8 p. *Aurora Pump Div., New York Air Brake Co.*

Circle 328 on Reader Service Card



Dust Filter

New filter traps dust when you pneumatically convey materials like grain, flour, insecticide, salt, copper, detergent, plastic resins, wood fiber. Has high efficiency because high-velocity counterflow air jet automatically cleans filter units one at a time while filter operates. Bulletin describes principles of operation, gives engineering data. Bulletin G-331, 8 p. *The Day Co.*

Circle 329 on Reader Service Card

To Load, Unload Anywhere . . .

"Relae-vador" is a truck door, a tailgate elevator, a ramp, a high lift to raise goods higher than truck floor, and a dockboard, all in one. Or it lifts itself out of the way if you don't need it. Lifting capacity up to 5,000 lb. Folder explains operation, uses, specifications. Bulletin 201-GL, 3 colors, 4 p. *Kappen Sales Co.*

Circle 330 on Reader Service Card

Foam Pads Packages

Corner pads made of foamed plastic protect packages against impact. They cost little, are easy to apply. How you use them is explained in Catalog Sheet CS-2, 2 p. *Pac-Tron, Inc.*

Circle 331 on Reader Service Card

Continued on page 90

Latest RAYMOND REACH-FORK® incorporates 40 important new features for the ultimate in appearance and performance . . . plus famous "Boarding-House Reach" that permits narrow aisle handling with existing racks and pallets!

ALMOST EVERYTHING ABOUT IT IS NEW

1. **CLEAN UNCLUTTERED LOOK** puts the Reach-Fork in a class by itself.
2. **"PICTURE WINDOW" VISIBILITY** provides operator with view unequalled by any other truck.
3. **SAFETY PLATE GLASS MAST GUARD** for increased visibility and safety.
4. **NEW NESTED MAST DESIGN** substantially reduces dead weight.
5. **AUXILIARY MOTOR** removed from mast for improved visibility, neater appearance.
6. **FASTER LIFT SPEEDS** due to lighter mast and carriage.
7. **INCREASED LOWERING SPEEDS** for faster work cycles.
8. **HIGH PRESSURE HYDRAULIC SYSTEM** decreases ram diameters, increases visibility.
9. **SAFETY RECESSED STEERING WHEEL** protects operator's arm and wrist.
10. **KNUCKLE GUARD** for safety in close-quarter operation.
11. **SMART-LOOKING ANGLED DASH PANEL** groups controls better, accommodates extra controls.
12. **2-SPEED LIFT** standard on 24-volt truck. Lift button located on directional control.
13. **NEW PISTOL GRIP HANDLE** on directional control for greater ease and convenience.
14. **CONTROL BUTTON ADJUSTABLE** between low and high speed lift for different duty and driver requirements.
15. **SEPARATE MANUAL LOWERING VALVE** near directional control for lowering during travel.
16. **REACH AND AUXILIARY CONTROLS** located for convenient operation, improved visibility.
17. **OVERHEAD GUARD** redesigned for greater safety, neater appearance.
18. **RESISTORS RELOCATED** on side of mast where heat cannot cause operator discomfort.
19. **RESISTORS AND COVER** redesigned for faster heat dissipation.
20. **AIRPLANE TYPE STEERING WHEEL** allows easy access to components underneath.
21. **ELECTRICAL SYSTEM** color coded and separately fused for easy trouble shooting.
22. **TWO OPTIONAL MASTS** — nominal or full free lift.
23. **MORE LIFT HEIGHT** for same overall collapsed height.
24. **BATTERY ROLLS OUT** from either side for fast exchange.
25. **NEW SPRING LOCK BATTERY GATES.**
26. **REMOVABLE BATTERY ROLLERS** simplify replacement.
27. **END BATTERY ROLLERS** equipped with ball bearings for easy entry and removal.
28. **IMPROVED AIR VENT LINE** allows surplus oil to drain back into reservoir.
29. **HYDRAULIC CUSHIONING** on reach and retract rams for greater control and load protection.
30. **CHROME PLATED LIFT RAMS** for increased abrasion resistance.
31. **HYDRAULIC REACH HOSES** protected between uprights.
32. **THIN CABLE REEL TAKE-UP** fits hose within overall width of truck.
33. **REACH CARRIAGE WIDTH** reduced to 32" for handling narrow pallets in bulk storage.
34. **REACH CARRIAGE HEIGHT** now 32" to permit stacking loads closer to ceiling.
35. **REACH CARRIAGE** contained between uprights, reducing overall length by 1½".
36. **WIDER FORK SPREAD** (32" maximum) for greater load stability.
37. **WHEEL BOX WIDTH** reduced with 3½" face wheels.
38. **1½" THICK ELEVATING FORKS** for easier spotting in pallets.
39. **POLYURETHANE LOAD WHEELS** standard equipment.
40. **BLACK BASE** resists scuffing, marking.

Additional Details on the all-new RAYMOND Reach-Fork will be found in our Bulletin 842. Write for a copy today.

RAYMOND® *Originator and World's Largest
Builder of Narrow Aisle Trucks*

The RAYMOND CORPORATION

3354 Madison St., Greene, N.Y.

Please send Bulletin 842 describing your newest RAYMOND Reach-Fork.

NAME _____

TITLE _____

COMPANY _____

STREET _____

CITY _____

STATE _____



Circle 94 on Reader Service Card

WHO USES

Rubbair®

the true door . . .
not a curtain.

Door?



A Rubbair Door installation at the warehouse of S. Kann & Sons Company, Hyattsville, Maryland

THE S. KANN SONS CO.
Washington, D.C.

READ THIS ACTUAL CASE HISTORY:

In response to your letter of March 25, we are happy to inform you that we are very pleased with the Rubbair Doors that were installed about 3 years ago in our warehouse at 5620 Ager Rd., W. Hyattsville, Md. They have held up well and have satisfactorily performed their function of keeping cold air out of the building while allowing easy passage of merchandise through the doorways. If we were to build a new warehouse, we would duplicate the Rubbair door installation.

Sincerely yours,

B. B. Bergunder, Jr.
Vice-President

Use Rubbair Doors to assure trouble free operation . . .

- Flexible Construction
- Rugged V-Cam Hinges
- Safety Cushion Nose
- Positive Air Seal
- Shatter-proof Windows
- Scuff Resistant Wear Panels

If you have an industrial door problem, drop us a line and let us help you solve it. Write for details and free illustrated catalog, today.

Stic-Klip®

MANUFACTURING CO., INC.
RUBBAIR DOOR DIVISION
57 Regent Street
Cambridge 40, Mass.

Dealerships available in protected territories

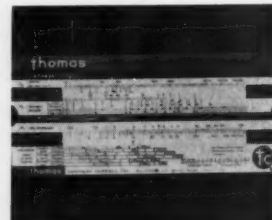
Circle 112 on Reader Service Card

**BULLETINS
CATALOGS
FILMS**

Strapper for Automation

New self-contained strapping unit helps you automate production line steel strapping operation. Weighs only 75 lb. Described in Folder AD-400-2-61, 2 colors. Acme Steel Co.

Circle 332 on Reader Service Card



Screw Conveyor Calculator

Slide computer calculates conveyor capacity, component horsepower capacity, capacity conversion, material horsepower, and friction horsepower. Available to qualified engineers. Request on company letterhead, addressing Box 11127A, Fort Worth, Texas. Thomas Conveyor Co., Inc.

Bucket Elevators

Manual on bucket elevators, gravity discharge elevator-

Continued on page 92

INDUSTRIAL TURNTABLES



ANY SIZE . . . ANY SERVICE

One use: 9-foot movable industrial turntable — variable speed drive, Belmont Smelting and Refining, New York. For other uses in your industry, send for CATALOG 15, describing turntables up to 76 ft.

Macton

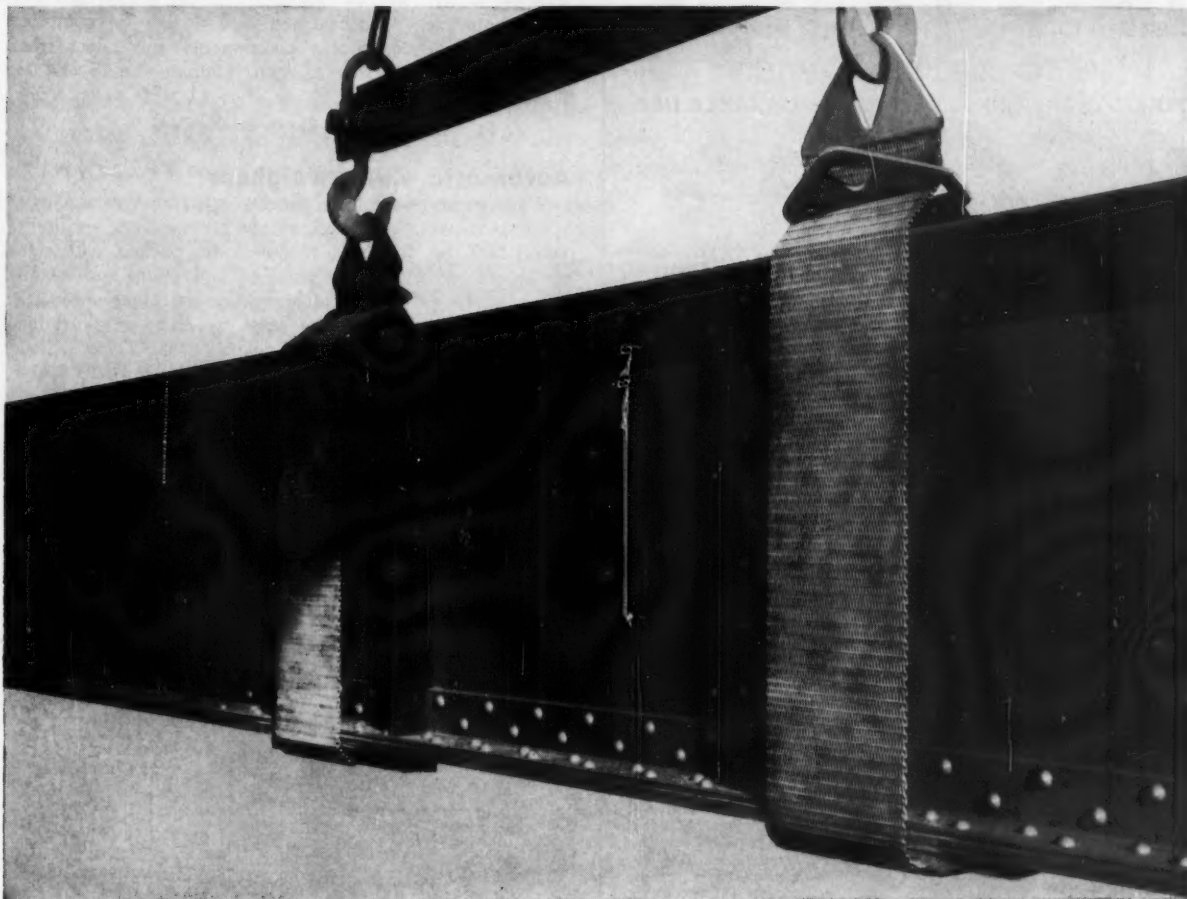
MACTON MACHINERY COMPANY

886 DYKE LANE • STAMFORD, CONN. • DAVIS 4-6161

Circle 64 on Reader Service Card

MATERIAL HANDLING ENGINEERING

STRENGTH



Only **GRIPPER** Metal Mesh **SLINGS**[®] give you extra strength + 6 other benefits

Safety, Flexibility, Load Stability, Gentle Handling, Longer Life, Fast, Easy Rigging

These Gripper Slings are cradling a monster . . . 28,000 lbs. of steel beam, 100 feet long. Yet, the men working on this project have complete confidence in Gripper Slings. Individually tested, Gripper Slings have a 5 to 1 safety ratio built into them. And, the open, metal-mesh construction lets you quickly examine every inch of the sling body for a thorough safety inspection.

Pre-tested and guaranteed Gripper Slings are available in standard lengths and widths to handle loads up to 100,000 lbs. For handling delicate loads or polished stock, ask about our PVC plastic or Neoprene-covered Gripper Slings.

Mail the coupon today for full information or a demonstration. Or, contact your nearest representative.

The Cambridge Wire Cloth Co.

Dept. W, Cambridge 3, Md.



☐ Please send Gripper Sling catalog and my distributor's name.



☐ Please arrange a no-obligation demonstration.

NAME _____ TITLE _____

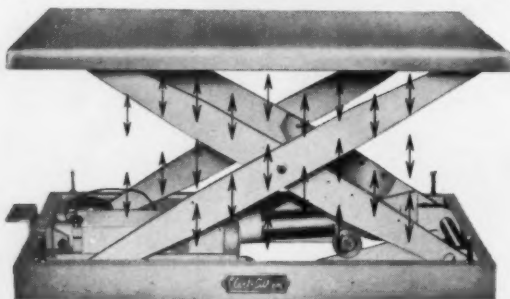
COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

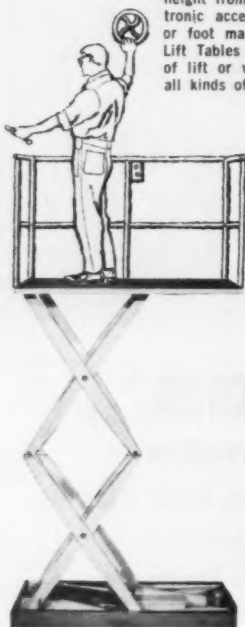
Clark-Aiken LIFT TABLES

UP TO 6000 LB. CAPACITY
FOR INTEGRATED SYSTEMS OR PORTABLE USE



PUT THEM TO WORK — TO POSITION YOUR WORK

Fast and sure control for any positioning within a 48" height from floor level on standard tables—with electronic accessories for automatic positioning or hand or foot manual control. Clark-Aiken electric hydraulic Lift Tables provide the easy answer to a wide range of lift or work positioning problems. Now in use for all kinds of jobs in all kinds of plants.



SO MANY USES — SO ADAPTABLE

Note the special double scissors unit illustrated—functions as an elevator and for adjusting large machinery or making set-ups, repairs, painting, etc., raises loads above 48" and up to 72".

Lift tables can be wheel-mounted for portable use, too. For fixed operations they can be flush-floor mounted—a special toe guard provides safety. Special cradle tops can be furnished for cylindrical objects and other curved-surface materials.



SEND FOR INFORMATIVE BULLETIN
Complete descriptive literature on the standard line of Clark-Aiken Lift Tables is yours for the asking—write, wire or phone today for prompt response.

THE **Clark-Aiken** COMPANY
LEE, MASSACHUSETTS

Canadian Representative: GORDON W. KEATES
133 Flora Drive, Scarborough, Ontario
Circle 23 on Reader Service Card

BULLETINS CATALOGS FILMS

conveyors, and pivoted bucket carriers. Gives you tables showing which elevator type you can use for each of 101 bulk materials. Manufacturer will install a complete system for you, or supply components you select from catalog section of this manual. Catalog be-55, 84 p. Webster Mfg. Co.

Circle 333 on Reader Service Card

Automatic Checkweighers

Want to know about a checkweigher that uses a conveyor as its weighpan, and weighs 80 packages a minute? You'll find the details in this bulletin, packed with data on accuracy, construction features, operation, and weight ranges of line of checkweighers. Also describes automatic counters, recorders, alarms used as checkweighing accessories. Bulletin 2968a, 2 colors, 8 p. Toledo Scale Corp.

Circle 334 on Reader Service Card

Polyethylene Floor Trucks

With seamless polyethylene tubs as bodies, these floor trucks are ideal for handling foods, chemicals, etc. The plastic is easy to clean, resists corrosion. There are 6, 10, and 14 bu. models. Dimensional data, pictures given in Catalog Sheet IS-2, 1 p. Rubbermaid, Inc.

Circle 335 on Reader Service Card

Continued on page 94

On production line ...

or one
at a time ...



BAG CLOSING EQUIPMENT

saves time and money!

For fast, secure closing of bags in any production application, you can depend on efficient, low cost FISCHBEIN BAG CLOSING EQUIPMENT... a complete line ranging from completely portable to fully automatic production line machines. Fischbein equipment performs reliably on all kinds of textile or paper bags.

WRITE FOR COMPLETE
CATALOG—FILE OF
FISCHBEIN BAG CLOSING
EQUIPMENT



DAVE FISCHBEIN CO. Dept. 40
2720 30th Avenue S., Minneapolis 6, Minn., USA

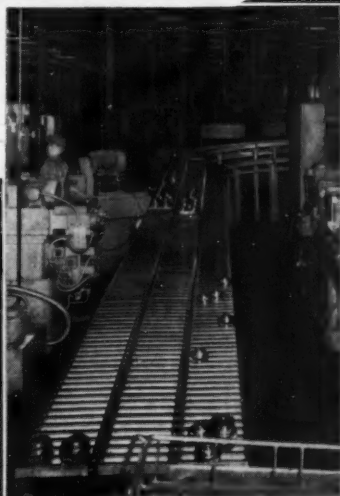
Circle 39 on Reader Service Card
MATERIAL HANDLING ENGINEERING

IT COSTS LESS

To Move Parts Between Operations

THIS WAY

This Olson Conveyor system saves thousands of man-hours yearly for a large automobile parts manufacturer. Roller conveyors, belt conveyors and chutes do all the "leg-work" moving automatic transmission planet carriers between operations. No truckers are needed . . . and there's no loss of machine operators' valuable time. The illustrations show why.



Castings from chuckers travel down Olson belt conveyors (rear), converge on roller conveyor for trip to broaching department.

Three roller conveyor lines keep battery of boring machines supplied with semi-finished castings. Extended conveyor ends serve as storage.

Line in foreground supplies grinder with basketed castings. From there, parts move along on the lower line to another department.



Parts in baskets move between various finishing operations on two roller lines while loose parts on right emerge from a grinding operation.



Why not talk to your Olson representative about the time and labor savings possible in your plant with and Olson conveyor system. For general plant ideas, request Catalog 1000-C.

OLSON CONVEYORS

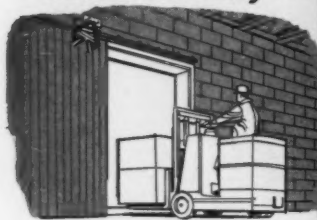
SAMUEL OLSON MFG. CO., Inc.

DIVISION OF CHERRY-BURRELL CORPORATION
2426 Bloomingdale Avenue, Chicago 47, Illinois

Circle 87 on Reader Service Card

Circle 6 on Reader Service Card

AIR-LEC automatically...



opens the door to savings in your plant...

sturdy Air-Lec Door Operators eliminate expensive manual operation of your doors. Heavy duty wall, ceiling-pull, or post-mounted switches can be operated even from a fork-lift truck. Easily installed, these operators are designed to meet demands of hard service. Maintenance is negligible. Mechanical trip available where electricity is not desired. Power cylinder can be changed to meet changing power demands. Open YOUR door to savings. Write for details.

Manufacturers of automatic sliding, swinging
and folding door operators since 1921



Listed in SWEET'S ARCHITECTURAL
and INDUSTRIAL FILES

Formerly Schoelkopf Manufacturing Co., Inc.

AIR-LEC Industries, Inc.

Dept. M • 320 North Third Street • Madison 10, Wis

BULLETINS CATALOGS FILMS

Cable Conveyors

"Universal Cable Conveyors" is collection of engineering bulletins that describe cable conveyors, give data on all components, such as track, trolleys, idlers, lubricators, etc. Bulletins also explain use of cable drives for power-free installations, and illustrate "table-cable" conveyors which have carrying fixture above trolley at working level. 40 p. *E.W. Buschman Co.*

Circle 336 on Reader Service Card

Compact Trucks

Some call them little, but compact is a better word for this line of stand-up rider trucks—they have big truck features like automotive brakes, handle loads up to 3 tons, some lift to 130 in. Bulletin includes low lifts, tractors, high lifts, and outrigger types. Bulletin 56-R, 2 colors, 8 p. *Moto-Truc Co.*

Circle 337 on Reader Service Card

Smart Dumbwaiter?

Push a button to select floor or level, and Recordlift takes your tote box there. Solves multistory conveying problems. Magnetic memory tabs on tote box do the trick. Can hook to automatic conveyors for horizontal

Continued on page 96

when you look for dockboards
COMPARE SIZE ... COMPARE PRICE
... COMPARE CAPACITY with

Langsenkamp's DOCK PLATE

LIGHTWEIGHT—LOW-COST
SUPER STRENGTH
ALUMINUM

GREATER CAPACITY PLUS ECONOMY!

Langsenkamp gives you an economical dock plate with greater work-load capacity to handle today's increased pay-loads.

It doesn't get tired! Special alloyed-aluminum has superior fatigue-resistance, giving Langsenkamp dock plates longer life.

Handling ease—Most sizes are so light in weight that one man can handle them easily.

9 Styles ... capacities up to 15,000 lbs. Over 65 stock sizes from 24 x 48" to 96 x 60" plus all popular options such as fork lift brackets, side rails and stop pins.

Exclusive—Optional abrasive safety surface gives permanent non-skid protection even when wet!

F. H. LANGSENKAMP COMPANY

<p>6,500 lbs. BRAND X 24" x 48"</p>	<p>7,000 lbs. BRAND Y 24" x 48"</p>	<p>8,500 lbs. BRAND Z 24" x 48"</p>
--	--	--

12,000 lbs. Capacity - 24" x 48"

still as low as **\$49⁰⁰**

229 E. South Street
Indianapolis, Indiana

Circle 58 on Reader Service Card

MAKES NARROW AISLES POSSIBLE

Stacks higher than 30 feet

A lift truck couldn't get down that aisle . . . and it doesn't need to.

The American Monorail Stacker not only handles loads safely in narrow aisles, but it can stack higher than 30 feet. Equipment can be adapted to stack rolls, baskets, pallet loads.

Crane plus Stacker serves multiple aisles. Safety controls prevent over-run. Useful in storing fragile goods—even women can operate. Floor or cab operated. Telescoping mast available.

Our Stacker added 180,000 cu. ft. of usable storage to one building—saved cost of building a new warehouse! Names of users on request.

Write for "Stacker bulletin"



1129 EAST 200th ST., CLEVELAND 17, OHIO
Conveyor Division, Tipp City, Ohio
Subsidiary: Canadian Monorail Co., Ltd., Brampton, Ont.

Circle 3 on Reader Service Card

Circle 45 on Reader Service Card

Save money on marking



with an automatic "ROLACODER" marker

Attaches to conveyor, case-sealer, etc. to mark from side or top • Works by friction • Imprints legible mark in same spot on case after case • Takes only 1 or 2 minutes to change type • No tricky adjustments • Precision-made for long trouble-free service • Pays for itself in months • Other models for marking 2 and 4 sides simultaneously.

Now available with amazing 'MAGIC INK ROLL' that never needs re-inking! Made of PORELON® microporous plastic

Write for "ROLACODER" literature

First and foremost in automatic production line CODING, MARKING and IMPRINTING machines

Gottsch

**GOTTSCHO Dept. D
HILLSIDE 5, N.J.**

BULLETINS CATALOGS FILMS

movement at destination level. Dimensions, explanation of mechanical details in Bulletin 151, 2 colors, 8 p. *Standard Conveyor Co.*

Circle 338 on Reader Service Card

Electric Eyes

Catalog shows line of photoelectric cells (eyes), with light sources, electronic controls, and timers to be used with them. Describes mechanical and electrical characteristics, dimensions, wiring, etc. Bulletin 611, 22 p. *Photomation, Inc.*

Circle 339 on Reader Service Card

Hand Trucks

One hundred and thirty models of 2-wheel trucks and dollies covered in new catalog. Gives capacities, dimensions. Also explains what to consider when choosing model for your work. Catalog 58A, 2 colors, 28 p. *Nutting Truck and Caster Co.*

Circle 340 on Reader Service Card

Scale Maintenance

Booklet tells how to get your weighing scales to perform without error. Describes special equipment you need, training for a satisfactory scale service program, and what it costs. 8 p. *Howe Scale Co.*

Circle 341 on Reader Service Card

NEW

POLYETHYLENE TANK WITH SPIGOT . . .
STORES AND DISPENSES LIQUIDS AND
GRANULAR SOLIDS



Viscous materials, granular solids and liquids flow freely through the spigot on the new Redmanson polyethylene tank. Corrosive liquids can be stored and dispensed as the spigot is also polyethylene. These tanks cut storage costs because they last longer than steel and cost far less than stainless. They are easy to clean, light in weight and content levels can be checked as the walls are translucent. A breather cover permits venting. Sizes up to 55 gallons with a 1/4" or 2" spigot. Write for information and prices.



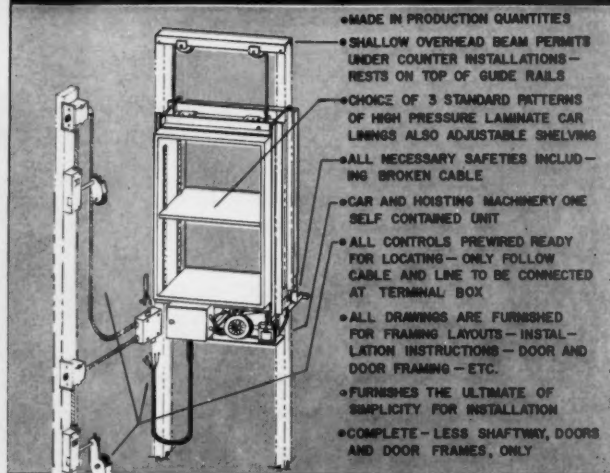
REDMANSON CORPORATION

630 Loucks Mill Rd. York, Pennsylvania

Distributorships and mfg. rep. territories available

Circle 96 on Reader Service Card

BUTLER JR. & SR. DUMBWAITERS higher profits at lower bids



Priced for the home.

Built for commercial loads of 200 to 400 lbs.

Get better acquainted with Butler Jr. & Sr. by writing . . .



FLINCHBAUGH/MURRAY CORP. 390 Eberts Lane, York, Pa.

Circle 42 on Reader Service Card

MATERIAL HANDLING ENGINEERING

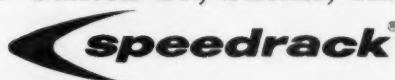
Cramped for space and still growing. A chick solves this problem by breaking through his shell.

Are your storage facilities overloaded? Are they flexible enough to adjust to inventory changes? Investigate Speedrack, originator of the adjustable Drive-In storage rack.

Your present warehouse equipped with Drive-In Speedrack can eliminate the need for a new building. It increases density of storage. It eliminates aisle space by allowing your fork truck to drive inside the rack. Merchandise, otherwise unstackable, can be stacked to the ceiling.

May we show you photos of Drive-In Speedrack applications in businesses similar to yours?

Write Speedrack Inc., 4400 Oakton St., Skokie, Ill.



SPEEDRACK INC./SKOKIE ILL./USA/IN CANADA/ SPEEDRACK LTD./WESTON ONTARIO



Drive-In Speedrack increases warehouse capacity, eliminating one aisle for every two pallets of depth.



Circle 109 on Reader Service Card



PRODUCT NEWS

Electrics Maneuver Easily

New 10,000- and 12,000-lb.-capacity electric fork trucks maneuver well, handle heavy loads with solid strength. Each model in the Spartan F-52T Series can travel 5-6 mph



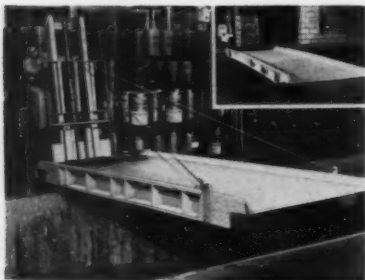
fully loaded, lift at speeds up to 52 fpm. A large compartment will take a 1,280 ampere hour battery, enough for an 8-hour shift. All major assemblies—drive axle, steering axle, and uprights—mount directly on load-bearing frame members. The motor is center-mounted on the drive axle for balance. These trucks pivot tightly around the drive wheels. Steering is easy and maintenance, convenient.

The Elwell-Parker Electric Co.

Circle 401 on Reader Service Card

Magnesium Industrial Bridges

Fork trucks easily place or remove new industrial bridges made of mag-



nesium for lightness. They span depressed rail spurs and other divided areas in plants. Full range of standard sizes from ten to twenty-four feet

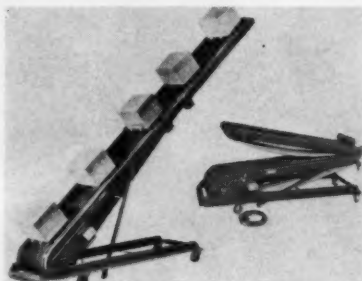
long, load capacities to eight tons. Also special sizes and capacities for heavier duty. All models have tire-saver safety curbs, flared ends for wide angle turns, beveled edges so trucks don't bump on and off. Optional features: cable eyes and fork lift loops (see picture), or hinges for permanent installations.

Magline, Inc.

Circle 402 on Reader Service Card

Adjusts Height While Running

Make a quick adjustment of working height while the Model B stacker-conveyor is working. It's done by hydraulic elevator. You can shift the angle of belt bed up or down within 45° from horizontal. The stacker-conveyor, easily handled by one man, folds to nearly half its length for



close quarters and storing. Principal applications: high speed loading and unloading of trucks, trailers, freight cars, transfer between floors, and pile stacking. Load capacity: 150 lb. per unit or 300 lb. total with full rated power. Belt speed: 65 fpm. Comes in 10, 12, 14, and 16 ft. lengths. Motor is ¾ h.p. continuous duty ball bearing type.

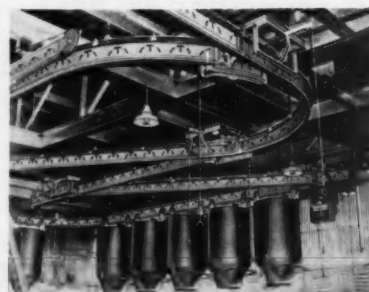
Hytrol Conveyor Co.

Circle 403 on Reader Service Card

Solves Overhead Difficulties

A new heavy duty track withstands heavy, swinging, jerky loads, provides a smooth, trouble-free road. Tarca Track gives maximum strength with

minimum weight. The rolled high carbon alloy steel rail has a hard, flat, raised running surface—prevents



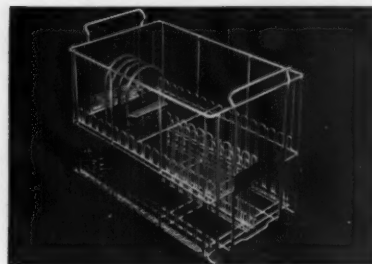
peening down. You can get the track in standard sizes from 8 to 20 inches deep, also special sizes and greater depth when required. The new track permits greater distances between track supports. Deflection under full load is small. Support comes from an all new ball-and-socket swivel connection at superstructure and top flange of the track. Tarca Tracks are uniformly straight and true, with all dimensions accurately held.

*Cleveland Tramrail Division
The Cleveland Crane & Engineering Co.*

Circle 404 on Reader Service Card

Custom-Made Tote Baskets

Tote baskets engineered and custom-made for particular parts save space, protect product. Wire construc-



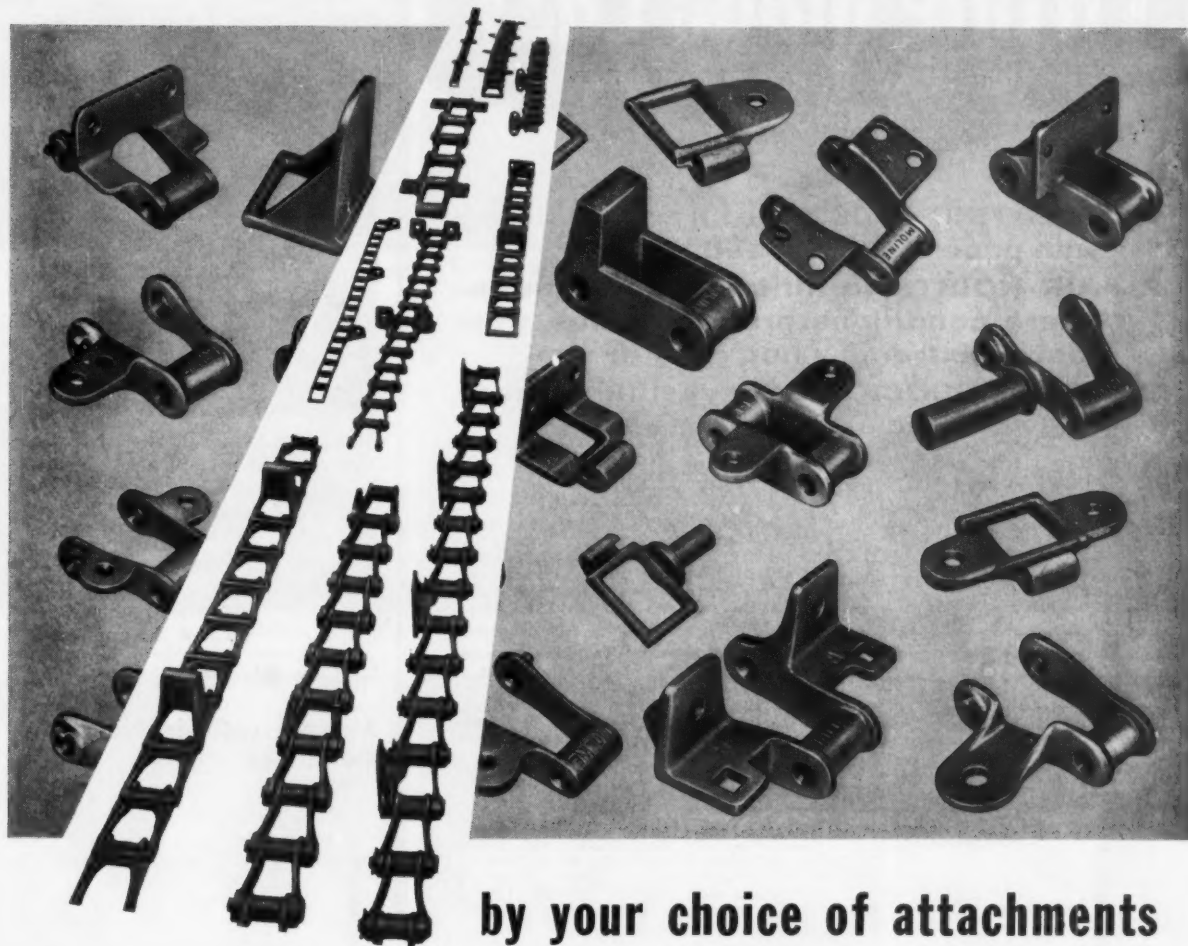
tion reduces weight. Basket pictured carries, protects printed-circuit panels for missiles; it makes handling faster, easier. Maker of these baskets will sketch one to suit your product, your handling method, as a free service.

Mid-West Wire Products Inc.

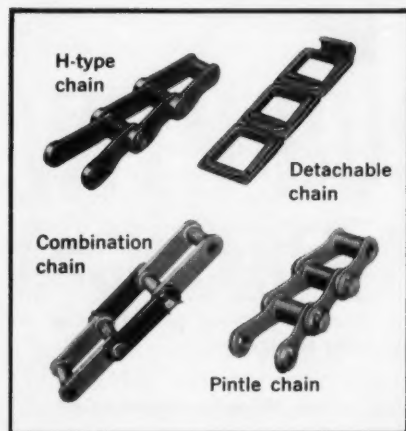
Circle 405 on Reader Service Card

MATERIAL HANDLING ENGINEERING

Moline Chains become freight trains



by your choice of attachments



Put on your imagineering cap and you'll see scores of conveyor ideas in the representative group of Moline chains and attachments shown here... ideas for lifting or lowering, pushing or pulling, scraping or dragging—for every kind of material handling you can think of.

Choose the attachment that solves your conveyor problem. There are hundreds of working combinations utilizing standard chain and attachments that are available in stock. If you don't see the right chain-attachment combination above, ask for the new Moline Design Engineers' Handbook. This new book lists all types and sizes of Moline Chains and attachments and provides hundreds of suggestions on applications and operation. Write for your copy today. And if your problem calls for "special" chains or attachments, consult Moline's engineering service.

*Specializing in the
manufacture of chains*

Moline authorized distributors
are located in all industrial
areas and principal cities.

Moline Chain

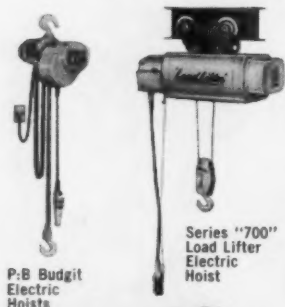
for conveying, elevating and power transmissions
MOLINE MALLEABLE IRON COMPANY
St. Charles, Illinois

Circle 73 on Reader Service Card

Lifting Made Easy

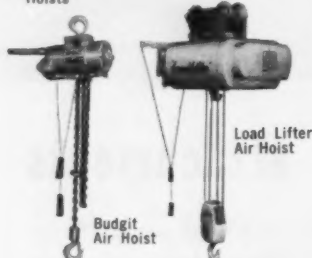
HOISTS AVAILABLE FOR EVERY
LIFTING JOB

- 1 ✓ **ELECTRIC HOISTS** for frequent lifting with pace setting speed
- 2 ✓ **AIR HOISTS** to lift fast where atmosphere conditions are hazardous, corrosive, extremely hot, dirty or wet
- 3 ✓ **CHAIN BLOCKS** for easy lifting where the work cycle is moderate



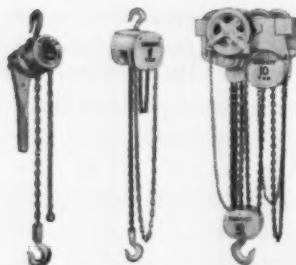
P:B Budgit Electric Hoists

Series "700" Load Lifter Electric Hoist



Budgit Air Hoist

Load Lifter Air Hoist



Tugit

Budgit Aluminum Chain Block

Budgit Army Type Chain Block

ELECTRIC HOISTS

P:B Budgit® Electric Hoists. 1/8 to 2 tons. Modern push-button hoists for regular service. Portable. Two fully enclosed automatic brakes. Spotting action is fast, accurate. 1/2-ton load can be lifted at 34 FPM. Hook suspension. Trolleys available. Standard models for intermittent service — AC, DC, and 12-volt battery types — have pull cord control.

Load Lifter® Electric Hoists. 1/2 to 15 tons. For heavy-duty and production line service. Safe 24-volts at the push button. Single and 2-speed control. A ton can be lifted at 60 FPM. Two automatic brakes. Types for lug or hook suspension; also with push, hand-gear or motor-driven trolley. Hi-hook model increases length of lift.

AIR HOISTS

Budgit® Air Hoists. 1/4, 1/2 and 1 ton. Compact, lightweight hoists for regular lifting service. Link and roller chain types. Explosion proof motor. Spark and corrosion resistant link chain models. Speeds infinitely variable to 75 FPM. Pull cord control. Safety hooks standard. Rigid mount type and push trolley available.

Load Lifter® Air Hoists. 1 to 15 tons. Wire rope type for heavy-duty service. Five cylinder motor for smooth operation at all speeds. Speed infinitely variable to 37 FPM. Pull cord control standard; throttle control available. Mechanical load brake adjusts itself. Lug, push trolley, and hand-gear trolley suspension.

CHAIN BLOCKS

Tugit® . . . the Lever-Operated Hoist. 3/4 to 3 tons. Light. Compact. Portable. Operates easily at any angle even in close quarters. Has countless uses in every industry. Spur-gear for highest efficiency. A 42-lb. pull on the handle lifts 2 tons. Spark and corrosion resistant models.

Budgit® Chain Blocks. 1/4 to 10 tons. For production or maintenance. Combine light, strong aluminum frame with spur-gear lifting and automatic load brake. 25 lb. pull on hand chain lifts 1/4 ton. Hook suspension standard. Trolleys available. Army-type Budgit has integral trolley that can be adjusted to fit several sizes of I-beams and permits high hook lift. Ask about spark and corrosion resistant models.

SOLVE YOUR LIFTING PROBLEMS. Call your nearby Shaw-Box Distributor for practical help in selecting the best type of overhead load handling equipment — hoist or crane — for each task. Or, write us for literature.



OVERHEAD LOAD HANDLING EQUIPMENT

Products of

MANNING, MAXWELL & MOORE, INC.

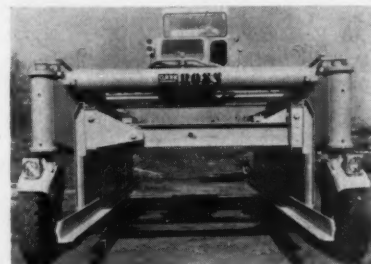
Shaw-Box Crane & Hoist Division • Muskegon, Michigan
In Canada: Manning, Maxwell & Moore of Canada, Ltd., Galt, Ontario.

Circle 68 on Reader Service Card

PRODUCT NEWS

Traversing Load Hooks

A new 40,000-lb.-capacity, pneumatic-tired straddle carrier features traversing load hooks for sheet steel and plate of varying widths. The



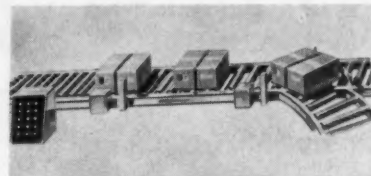
Series 100 Model 90130 carrier handles loads up to 30 inches high, 36 to 102 inches wide. Raising, lowering, and traversing is hydraulic. The 6-cylinder, 145-h.p. gasoline engine gives the carrier a top travel speed of 20 mph with maximum load.

Industrial Truck Division
Clark Equipment Co.

Circle 406 on Reader Service Card

Magnetic Code Guides Conveyed Items

You just push buttons, to put a magnetic code on your tote box, carton, can, or part. The code then guides the item to any selected sta-



tion on your conveyor line. Ferrous inserts on tote boxes, strapping or staples on cartons hold the magnetic signal. Works with all kinds of conveyors and tow lines. Use it for sorting, order-picking, dispatching, live storage. Mag-Pac controls are made with solid-state devices, so they have almost no moving parts to wear, no tubes to replace.

Flo-Tronics, Inc.

Circle 407 on Reader Service Card

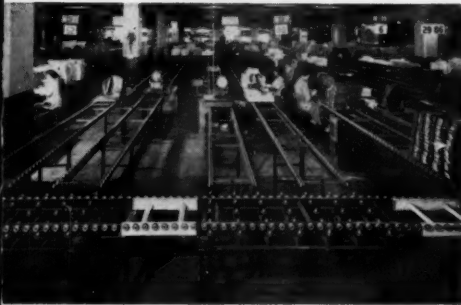
Low-Profile Tractor

Only 3 ft. high, diesel-powered "paymover" tractor is for low-head-room, as in mines. Length only 12 ft. 1 in., width 5 ft. 5 in. Exerts 3 or 4 tons drawbar pull. Automatic trans-

Continued on page 102

MATERIAL HANDLING ENGINEERING

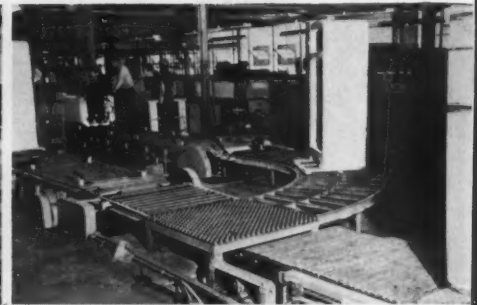
CUT YOUR HANDLING COSTS



Single-row wheel conveyors as used in department store marking rooms



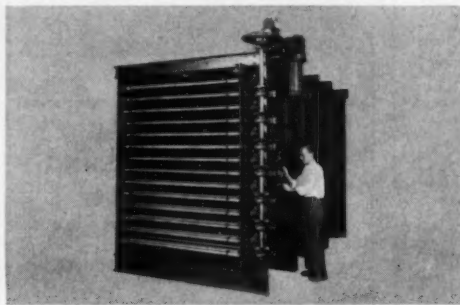
Powered belt conveyor. Horizontal and inclined with rubber, canvas or wire mesh belts



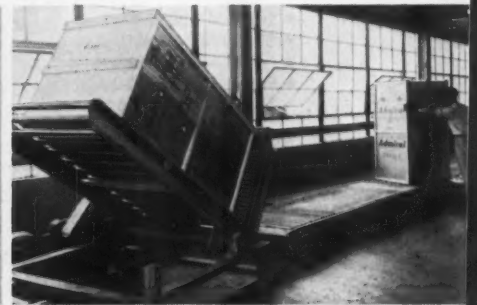
Apron conveyor assembly lines, ball-transfer switching station, in major appliance plant



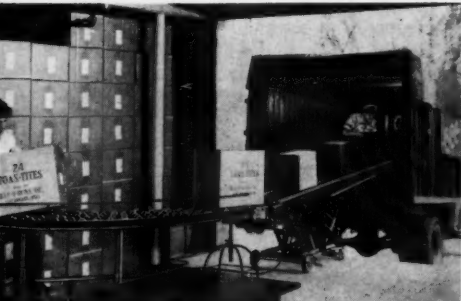
Overhead cable and roller conveyors, as used in wholesale drug warehouse for order picking



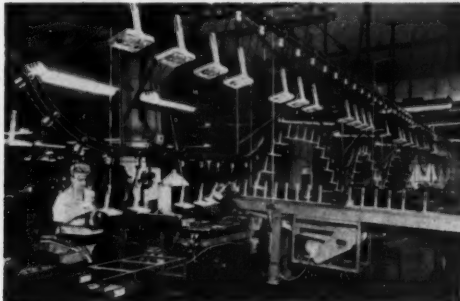
Automation. Special sheet feeder receives, stores and automatically loads and unloads curing press



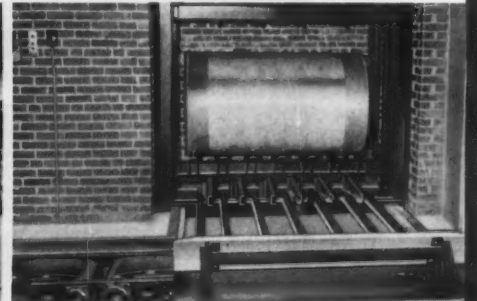
Up-enders, down-enders and special units are easily integrated into standardized conveyor systems



Portable wheel, belt conveyors: versatile in warehouses; shipping, receiving docks; stock rooms, etc.



Trolley carries light to medium weight loads, up, down, around all operations, at convenient heights



Automatic reciprocating hoist, belt conveyors handle paper rolls between floors in publishing plant

WITH BUSCHMAN CONVEYORS ENGINEERED FOR ANY NEED IN ANY INDUSTRY

Buschman is your most logical source for a complete line of materials handling equipment, because they offer exceptional basic patent features and experience-engineering. From portable in-stock gravity conveyors to their famed Bush-Lock powered cable units, the Buschman line effects the greatest economy of space and handling costs in *any* situation. Here are a few typical applications that suggest how Buschman can serve *you*. The E. W. Buschman Company, 1450 Clifton Avenue, Cincinnati 32, Ohio.

Write for information on Buschman powered systems and in-stock gravity units for your use.

Buschman
CONVEYORS

Complete Conveyor Systems for all industries — Engineered, Manufactured, Installed.
Representatives in Principal Cities. See Yellow Pages. 373

Circle 9 on Reader Service Card

Circle 55 on Reader Service Card



- Lowered Height 3 1/4"
- 90° PIVOT—2-Ways
- Lift 5"—SKF Bearings
- For Single or Double Face Pallets & Skids

NOW ONLY \$350.00

F.O.B. Chicago

YOUR CHOICE
of sizes in either model:

Widths: 20 1/2" or 27"
Lengths: 36", 42" or 48"
Wheels: Steel, Rubber or Bakelite (at no extra cost).
Specify Model No., Fork width and length and type of wheels wanted.

BT-24—2400 lb. Cap.....\$350.00

BT-44—4400 lb. Cap.....\$395.00

WRITE—WIRE—PHONE Dealer Inquiries Invited

INDUSTRIAL HDLG. EQUIP. CO.

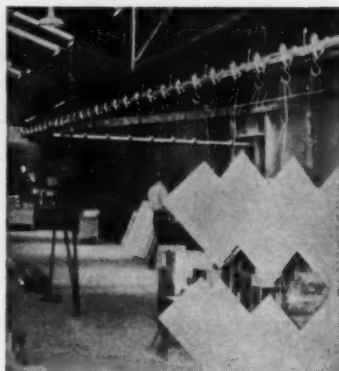
1229-31 W. Monroe St., Chicago, Ill.

Phone MOOnroe 6-8554

Circle 29 on Reader Service Card

ECONO

Overhead Trolley Conveyors



For
Retailers - Wholesalers - Manufacturers

To Aid The Above In
**STORAGE - PROCESSING
TRANSPORTATION
ASSEMBLY OPERATIONS**

Investigate today this versatile, efficient low cost conveyor.

Write for Literature and Prices

**ECONO MFG. CO.,
Celina, O.**

PRODUCT

NEWS

mission has 3 forward speeds and reverse. Other features: 24-v. electric



cal system, compressed air starting, exhaust scrubber, power-assisted steering, air-over-hydraulic brakes.

Frank G. Hough Co.

Circle 408 on Reader Service Card

Strapper Automatic or Semi-Automatic

The same new basic steel strapping device, F7, can put straps on automatically or semi-automatically. For full automatic operation package-circling tracks and controls are furnished. The F7 is self-contained, air-powered, electrically controlled. It weighs 75 lb., comes on a conveyor

You can even read this scale around corners—up to 100 ft. away!

only Martin-Decker has this Eye-Level Remote Indicating Crane Scale!



36 Models with capacities from 500 lbs. to 60,000 lbs.

MARTIN DECKER

Minimum headroom requirement gives you more stacking space • Full 360° dial makes indicator easier to read, more accurate • Exclusive sensater-type load cell eliminates surface friction • Full tare adjustment to manually zero out boxes, baskets, hooks, etc. • High safety factor—ultimate strength more than 5 times rated capacity. Dial crystal is shatter resistant optic plastic • All scales available in metric calibrations.

Write for Technical Brochure T-169

The standard Martin-Decker Sensater Crane Scale has all of the precision features of the remote model.



Precision Pressure Instruments
Testing—Weighing—
Load and Force Measurement

MARTIN-DECKER CORPORATION • 3431 Cherry Ave., Long Beach 7, Calif.

Circle 71 on Reader Service Card

END THIS COSTLY MAN-KILLING PRACTICE!

— save lives, limbs and money with the



NOLAN^{MODEL H} ONE MAN CAR DOOR OPENER



Opens any freight car door in 20 seconds or less! ONLY \$45 f.o.b. Bowerston.

Write for complete new catalog

The Nolan Co., 110 Pennsylvania St., Bowerston, Ohio

Circle 82 on Reader Service Card

MATERIAL HANDLING ENGINEERING

height stand. Is so compact that 2 or more units mount together on 12-in. centers for multistrap packaging. Lengths of strap feed and take-up are unlimited. Uses air at 60 p.s.i., controls work on 110 v. 60-cycle current, draw 15 amps. Handles strap widths of $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, or $\frac{1}{2}$ in., and gages of 0.015, 0.018, 0.020, and 0.023 in. Operates on a package face as small as 4 in., and receives packages from either right or left.

Acme Steel Products Div.
Acme Steel Co.

Circle 409 on Reader Service Card

Belting Link Frictionless

New connecting link (eyelet) for powered belt conveyors has coined, relieved (depressed) surface. Eliminates wear on plastic sprockets over which belting travels, and ends belting slack due to eyelet wear. Furnished as standard on all Wendway conveyors.

Union Steel Products Co.

Circle 410 on Reader Service Card

Hand Truck, Lift Truck, Dolly

Multipurpose hand truck incorporates crank-and-ratchet lift, so a pair can do the work of a lift truck and a dolly. Eliminates manhandling of heavy loads. Has ball-bearing swivel casters. Two models, 500 and 1,000 lb. capacity. Dimensions of both: 52 in. high, 18 in. wide.

Di-Pelco Corp.

Circle 414 on Reader Service Card

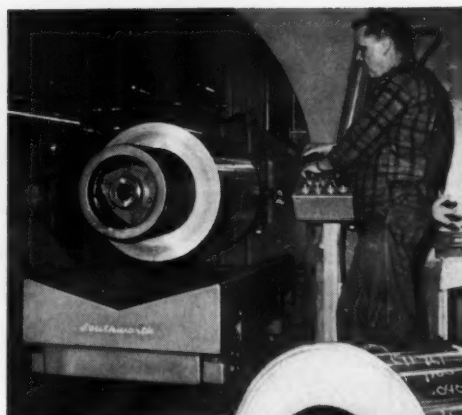
Crane Rides Road or Rails

Adapters enable rubber-tired erecting cranes to travel on railroad tracks at speeds up to 35 m.p.h. Consists of extra, vertically-adjustable front and rear axles mounting small diameter railroad wheels. To convert from road to rail, driver positions crane over track, then jacks down the railroad wheels. Front set takes full front-axle load, freeing front rubber tires from contact with rails. Rear set is lowered only enough to take half the rear-axle load, so rear rubber tires remain in contact with track, and drive the crane. To resume highway or off-road travel process is reversed. It takes only a few minutes. The adapters can be used with P & H cranes having capacities from 12½ to 15 tons.

Harnischfeger Corp.

Circle 415 on Reader Service Card

Continued on next page



How an Automated Coil Buggy



Photos Courtesy Aluminum Company of America, Davenport, Iowa, Works

Cut Costs At Alcoa!

Fingertip control of this job-designed, mobile coil buggy eases coil off mandrel of tension leveler, carries it twenty feet, and positions it for "C" hook pick up . . . while new coil is being started. Southworth engineers modified the top of a regular, 12,000 lb. capacity ML-12 Lift Table* to accommodate various coil diameters and lengths. Result was a three-way slash of operating costs, as transfer time, surface damages and accident hazard factors were all reduced. Why not talk to Southworth about increasing material handling efficiency in your plant? Write:



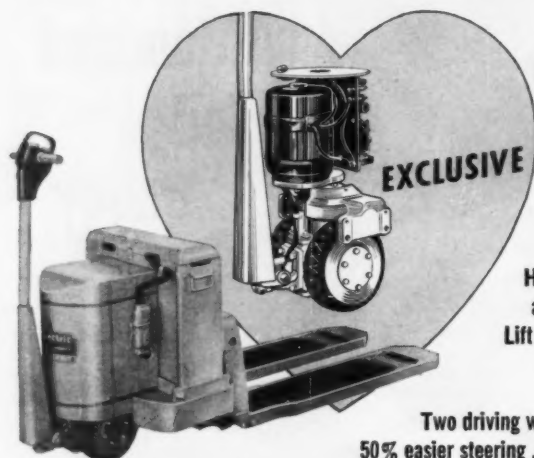
*PATENT PENDING

SOUTHWORTH LIFT TABLES

a division of SOUTHWORTH MACHINE CO., 309 Warren Ave., Portland, Me.

Circle 108 on Reader Service Card

HEART OF THE *Hydro***Electric**



... THE DYNA-DUAL POWER UNIT

Compare the Hydroelectric features with any other "Driver Lead" Lift Truck. The Hydroelectric quality of construction merits your inquiry.

Two driving wheels instead of one ...
50% easier steering ... ease of maintenance.

NOTE: The Dyna-Dual Power Unit is interchangeable on all models.

A TRUCK FOR EVERY PURPOSE AND MATERIAL



LIFT TRUCKS, INC.

CINCINNATI 14, OHIO



ON-TIME
maintenance cuts
down-time **DOWN**

Hobbs

**INDUSTRIAL
HOUR METERS**



For use with gasoline, electric
and diesel powered equipment

PLANNED MAINTENANCE based on actual hours of use is the answer to more GO-time and less DOWN-time on your equipment!

TRUE RUNNING TIME gives you a realistic basis for renting and leasing, service contracts, buying and selling.

HOBBS electrical timing instruments are the basic source for the facts you need—revolution counters cannot do the job. Distributors in principal cities . . . WRITE FOR CATALOG 600.



John W. Hobbs Corporation

A DIVISION OF STEWART-WARNER CORPORATION
3961 YALE BLVD. SPRINGFIELD, ILLINOIS

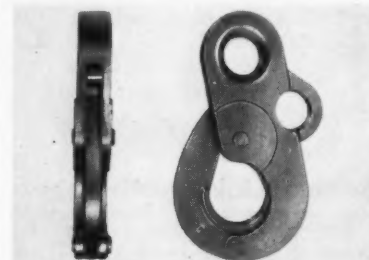


Circle 50 on Reader Service Card

PRODUCT NEWS

All Purpose Hook

The Release-a-matic hook can be released safely while loaded. Releasing feature permits the operator



to stand clear, eliminates the hazards of unhooking live loads. Company says positive lock prevents opening under any load conditions except when intentionally released by the pull ring. Combines quick use of conventional hook with safety of a shackle.

Merrill Brothers

Circle 411 on Reader Service Card

New SP Hydraulic Cranes

New Model 110 self-propelled cranes

AT LAST!

AN AUTOMATIC BATTERY RECHARGER!



**LaMarche
Recharger**

- Increases Battery Life
- Lowers Maintenance Cost
- Saves Space
- No Moving Parts —

IT'S FULLY AUTOMATIC!

A completely new concept in battery recharging, developed by the pioneer of Silicon self-regulating battery chargers. Units can be mounted on wall, floor, or truck.

Over 70 standard models to choose from. More than 18,000 units in use today!

Guaranteed for one full year by:

LaMarche Mfg. Co., Inc.

3955 25th Ave. Schiller Park, Ill.

Gladstone 678-6855

Circle 57 on Reader Service Card
MATERIAL HANDLING ENGINEERING

come in 4 versions. All ride on 3-wheel, front axle powered, pneumatic-tire chassis. Simplest version has hydraulic cable hoist, manual boom topping. It can lift 2½ tons at 7 ft. from bumper, 5 tons 2 ft. from bumper. Fancier model has hydraulic boom topping, 6-ft. manual or power boom extension, lifts 1½ tons 13 ft. from



bumper, can raise hook 19 ft. 2 in. above ground. Third modification has hydraulic telescoping boom extending horizontally from 7 to 13 ft. Fourth option gives hydraulically controlled rotation through 220°, and boom elevates to 50" by hydraulic power. Manual extensions give this boom working radius of 18 ft. 7 in.

Austin-Western

Circle 412 on Reader Service Card

Stacks Drums Three High

Company has added drum handling equipment to its line of Crown fork trucks. Model WT-90 (illus-



trated) has 1,000 lb. capacity, 90" lifting height; and 50" free lift for stacking drums three high. Drum handling attachments adapt to all straddle type Crown fork trucks. Available in telescopic and fixed mast types ranging in lifting heights from 54" to 130". Attachment is easily removed.

Crown Controls Co., Inc.

Circle 413 on Reader Service Card



Staple-nailing expendable skids, crates and boxes.



Portable stapling plier solves carton assembly problem.



Attaching shipping tags to filled corrugated cartons.



Fastening liners and protective pads to shipping containers.

DUO-FAST gives you four "extra men" in your packaging and shipping departments



One man, plus a DUO-FAST Stapler, can out-work four men using old-fashioned fastening methods on industrial packaging. And that adds up to money saved.

Whether it is staple-nailing crates, assembling corrugated cartons, lining box cars, or attaching labels to filled cartons . . . DUO-FAST has the correct model and staple needed to do a good job, and do it fast!

You'll like DUO-FAST. You'll like the Free Service Guarantee. Write for the FT-17 Industrial Packaging Brochure, and the address of your DUO-FAST representative.

FASTENER CORPORATION 3700-A River Road, Franklin Park, Illinois 1270

DUO-FAST Staplers
Tackers
Staples

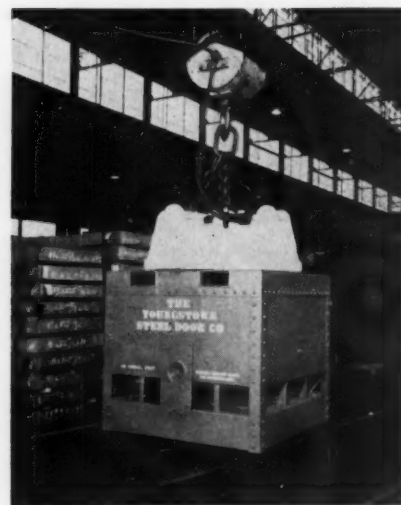
Everything you need for tacking, stapling and nailing.

Circle 37 on Reader Service Card

**FOR
PREDICTABLE
PERFORMANCE
SPECIFY
YOUNGSTOWN
TOP LOADING
AND
BOTTOM UNLOADING
BULK MATERIALS
CONTAINERS**



▲ CRANE HANDLING
 ◀ FORK LIFT TRUCK HANDLING
 ▼ MAGNET HANDLING



• Consult with us for improved handling of your bulk materials

THE YOUNGSTOWN STEEL DOOR CO.

Camel Sales Company • Camel Company Limited

CLEVELAND • CHICAGO • NEW YORK • YOUNGSTOWN

Circle 130 on Reader Service Card



ASSOCIATIONS

SPHE

The 1961 SPHE National Packaging and Handling Competition held annually by the Baltimore Chapter will be Nov. 13 and 14. Top award merits the Harold Jackson Trophy. First, second, and third place awards are made in each of eight classifications. A SPHE Seminar will be conducted during this 7th Annual Eastern Packaging and Handling Show in Baltimore. Four sessions will be held.



SPHE AWARD: David G. Hill (right), president of Pittsburgh Plate Glass Company, receives the first annual industrial packaging award from Henry Stephens, president of the Steel City Chapter of the Society of Packaging and Handling Engineers. The award was in recognition "... of outstanding contribution to the furtherance of industrial packaging in the Pennsylvania, Ohio, and West Virginia area." The Steel City Chapter was organized four years ago, and is one of 20 SPHE organizations located throughout the country.

NPA

Elmer R. Kohls has been elected chairman of the Financial Officers' Group of the National Paperboard Association. Kohls is general manager of finance of the Downington Paper Co., and its assistant treasurer and assistant secretary. Prior to joining Downington, he was associated with Dresser Industries, Price Waterhouse, and Radio Condenser Co.

MHI

The business-social-annual meeting of MHI will be held October 30-31 at Greenbrier, White Sulphur Springs, W. Va. resort.

NWPMA

The 3rd Western Pallet User's Conference has been arranged by the National Wooden Pallet Manufacturers Association. It will be held Oct. 11-12 at the Hotel Multnomah, Portland, Oregon. The Purchasing Agents' Association of Oregon is participating in plans for this conference. Registrations must be made in advance directly to NWPMA, at headquarters, 609 Barr Building, Washington 6, D.C. Registration fee is \$15.

MHEDA

The 1962 National Convention has been scheduled by the Material Handling Equipment Distributors Association. It will be held May 8-12, 1962 at the Sheraton Towers Hotel, Chicago.

AMHS

John E. Sullivan is new president of Northern California Chapter AMHS. Newly elected board members are: V. E. Dyckman, John M. Mustanich, William

A. Shepherd, and Walter Perkins. The newly elected officials will serve with four holdovers: Dan Billings, Stan Bober, J. R. Merry, and Howard Fisher, Leo Delventhal, as past president, makes up the full complement of the board of directors.

Los Angeles Chapter's July 13 meeting was a day time tour of the Harbor material handling facilities at Long Beach. R. F. Berbower, assistant chief harbor engineer of the Long Beach Harbor Department, was host. The program was divided into bus and boat tours. The 1961-62 executive committee of the Los Angeles Chapter includes: Charles M. Shibel, president; Daley H. Dooley, vice president; Glen Harshbarger, treasurer; and Park Chapman, secretary. The LA Chapter has started its 1961 membership drive. Tom Brown is chairman.

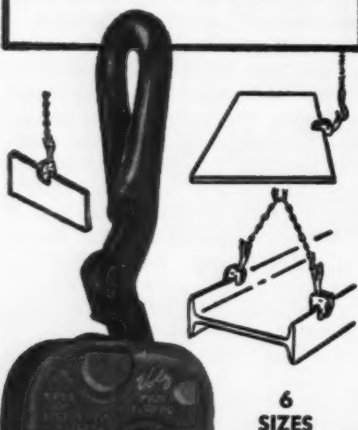
Montreal Chapter at its recent dinner meeting heard D. M. Young, general manager of Edward N. Hay & Associates of Canada Limited, Toronto management consultants. Young spoke on the selection of material handling personnel. Attending the meeting was John Walsh, vice president of Region No. 1 of the AMHS which takes in Montreal. The same day, J. P. Coleman, of Dominion Oilcloth & Linoleum Co. Limited, conducted a seminar on "Training Your Fork Lift Truck Operators."



THE HUMOROUS SIDE of some severe marketing problems is brought out by speaker Frederick J. Close, vice president and general sales manager of Aluminum Company of America. Mr. Close spoke at the June 21 meeting of The Material Handling Institute, Inc. in Pittsburgh. Seated at the head table left to right are: L. West Shea, MHI managing director; S. McClintic, Mellon National Bank; C. L. Fell, American Monorail Co.; Philip Hill, Hyster Co.; B. E. Phillips, Clark Equipment Co.; Mr. Close; Robert F. Moody, MHI president, Hyster Co.; G. E. Seavoy, Whiting Corp.; Norman Price, Colson Corp.; Howard Palmer, Lewis-Shepard Products, Inc.; and R. L. Fairbank, Towmotor Corp.

YOUR BEST MOVE... MOVE
with **MERRILL**
MATERIAL HANDLING
DEVICES FOR THE MOST
IN *Safety and
Economy*

Imitated, but never duplicated,
Merrill Lifting Clamps are Drop
Forged to give you Safety in Hand-
ling and Economy in Operation.



6
SIZES

**FEATURING
THIS
MONTH**



HORIZONTAL PLATE CLAMP
Rated capacity — 3 ton (6 tons
per pair). Completely drop
forged... Heat treated.

Over 25 Material Handling
Devices described in our
catalog C-3.

Ask for a copy.

MERRILL BROTHERS

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1-40

Circle 72 on Reader Service Card



INDUSTRY

NEWS

Bostitch Appoints Wilson General Sales Manager

John M. Wilson, former sales manager of Bostitch, Inc. has been appointed general sales manager of the company. He succeeds James M. Nestor, resigned.

Chainveyor Corp. Appoints Western Sales Manager

Charles L. Long has been named western sales manager for Chainveyor Corporation's line of engineered overhead conveyor systems.



Long

Long has been with the company since 1947. He formerly worked in project engineering, and served as Midwest Division manager. He will headquarter in Los Angeles.

Carlson Head AC's Engine- Material Handling Division

John W. Carlson has been appointed general manager of the Allis-Chalmers Mfg. Co. Engine Material Handling Division. He joined the company in 1938. His most recent position was assistant general manager of AC's Construction Machinery Division.



Carlson

Carlson succeeds L. C. Daniels, who in anticipation of retirement, asked to be relieved of duties. Daniels had been general manager since 1957. He continues with the company in an advisory capacity.

Symington Wayne Appoints Two New Vice Presidents



Bredimus



Godschall

Symington Wayne Corp. has appointed F. L. Bredimus as vice pres-

ident-sales, and C. H. Godschall, vice president-manufacturing.

Bredimus will manage all sales operations of the corporation's nine divisions and subsidiaries in the US and Canada. He will continue as president of Globe Hoist Co., a subsidiary.

Godschall will manage all manufacturing operations of Symington Wayne's North American divisions and subsidiaries. He has been vice president in charge of planning and production of the corporation's Wayt Pump Co. Division since 1957.

Chase Bag Names Division Manager

Eugene P. Alexander has been appointed manager of The Chase Bag Company's Multi-wall Bag Division. He has been with Chase since 1948, and has been sales manager of the company offices in Detroit and Chicago.



Alexander

Since 1959 he has been sales manager of the Multi-wall Bag Division. He will headquarter in New York City.

Towmotor Establishes Factory Sales-Service Branch

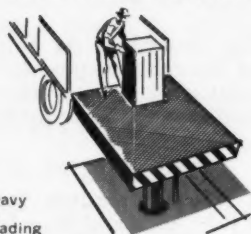
A complete factory sales and service branch in Oakland, Calif. is announced by Towmotor Corp. Location is at 699 Fourth Street. It will serve the Metropolitan Bay Area and eight surrounding west coast counties.

The new factory branch is headed by Leslie Andrew, branch manager, and Art Regnier, service manager. Both have been with Towmotor for many years as specialists in material handling equipment and handling techniques.

Heil Co. Assignments

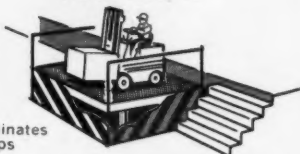
Three of the key men associated with Load Luger and Huge Haul detachable container systems have joined The Heil Co. Heil recently purchased these lines from the Ingersoll-Kalamazoo Division of Borg-Warner Corp.

YOU'RE LOSING



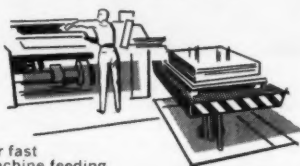
For heavy lifting and loading

MONEY IF



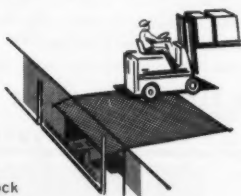
Eliminates ramps

YOU'RE NOT



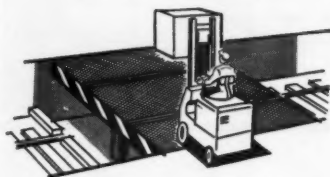
For fast machine feeding

USING THESE

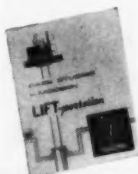


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GLOBE LIFTS



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GLOBE

GLOBE HOIST COMPANY

PLANTS: PHILADELPHIA • LONG BEACH, CALIF.

*Hoist is our middle name...
our only product line*

A. M. Klinger will continue in his capacity as sales manager of material



Sexton



Klinger

handling products. L. F. (Bud) Sexton has been appointed chief design engineer, and George Palmer will continue as design engineer.

Allis-Chalmers Promotions

Carl G. Meyer has been appointed manager of the A-C Engine-Material Handling Branch at Atlanta. For the last two years, he was material handling sales manager at the company's Oakland, Calif. branch.



Meyer

Meyer succeeds R. W. Summers. Summers is now contact man for the Engine-Material Handling Division with all US Government agencies. Merrill E. Morgan has been named to succeed Meyer in Oakland.

Cambridge Wire Appoints Two Department Heads

Olney P. Ross has been appointed head of Conveyor Belt Sales Department and Joseph E. McKnett now heads the Wire Cloth Department at The Cambridge Wire Cloth Co.

Ross has been with the company since 1939. McKnett joined Cambridge in 1951.

Chase Bag Company Appoints Ad Manager

B. J. Chase has been appointed advertising manager of The Chase Bag Co.



Chase

Chase was previously supervisor of Eastern produce sales. He has been a member of the Chase sales staff for the last 14 years. In his new post, he is in charge of advertising, sales promotion, and public relations.

Dempster Forms New Containerization Division

Dempster Brothers, Inc., Knoxville, Tenn. has formed a Containerization

Continued on next page

\$1695⁰⁰

BUYS THIS

2000^{lb.}

CAPACITY TRUCK



NEW Walkie Worklifter[®]

**Priced \$500⁰⁰ under
previous straddle models**

A fine, new standard line of 2000 lb. capacity fork trucks... lifts to 120" (30" to 48" pallet widths up to 42" long)... an agile middleweight... operates on light floors, narrow aisles... solid construction, yet simple, easy to maintain... choice of batteries and chargers... quality controls... polyurethane wheels... a reliable full 8-hr. day's duty, year after year... from \$1695 for 90" model, plus battery and charger; \$1795 for 120" lift.

Write for Full Color Specification Brochure

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Chicago 24, Ill.

Representatives in principal industrial areas

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Circle 43 on Reader Service Card
September, 1961

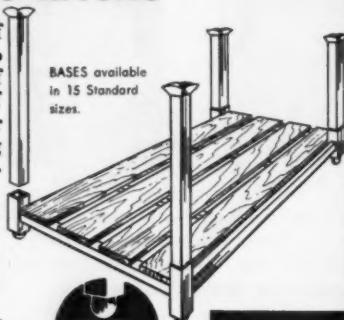
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One base and any combination of posts, sides, ends or enclosures to give you the *Universal* method of **HANDLING and STORAGE** of most all materials. Heavy tubular steel construction insures long life and almost unlimited stacking.

JUNIOR
Stak-Pal
1200 lb. Capacity

STANDARD
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3000 lb. Capacity

BASES available
in 15 Standard
sizes.



STACKING
HOPPER
BOXES



END
FRAME
RACK

STAK-PALS produce major reductions of handling and storage costs for as little as \$17.80 each fob factory for 100 — 30" x 42" basic racks with 24" posts.

Write for catalog giving complete information.

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COMPANY
222 COLBURN AVENUE
JOLIET, ILLINOIS

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INDUSTRY NEWS

Division, headed by A. T. Adams. Adams formerly was project director and west coast regional engineer of the Production Development Division of Reynolds Metals.

OPEN HOUSE WELCOME: Edmund F. Buryan (left), president of Motec Industries, Inc., greets Major General John S. Guthrie,

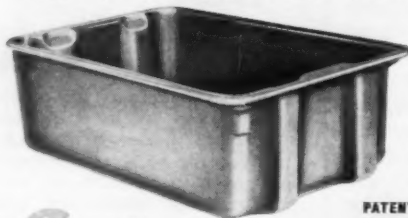


Commanding General XIVth Army Corps, at the Motec Industries Open House at Hopkins, Minn. June 25. General Guthrie became a vice president of Motec Industries following his retirement from the U.S. Army on June 30. Reporting directly to the president, General Guthrie is vice president for Systems Management and Director of the Molelectronics, Motec Engineering, and Mohawk Foundry & Forge Divisions.



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WON'T ROT
WON'T DENT
WON'T RUST
WON'T WARP

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2,823,829

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FIBER GLASS
reinforced polyester

SIZES
16 x 10 x 5
18 x 12 x 6
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22 x 17 x 10
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COLORS
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GREEN
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They stack and nest in their own dimension. No mechanical gadgets or space wasting cross-stacking. These pans stack straight, firm, and high... possible only with the exclusive Lewis "contour offset" design. Heat pressure molded in one piece of mighty Fiber Glass.

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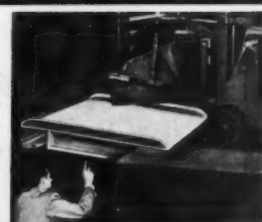
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magcoa

**THE OLDEST TRADENAME
IN LIGHT METALS
MATERIALS HANDLING PRODUCTS**

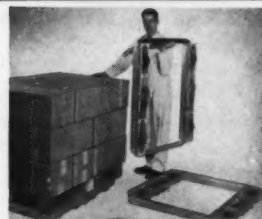
MAGNESIUM DOCKBOARDS

For safe, skid-proof truck and rail loading! Rugged but lightweight — one man can position. Engineered to fit your dock and equipment. Most modern economical dockboards available.



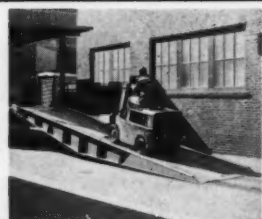
PALLET DOLLIES

Free your lift trucks — end loading bottle-necks! Magnesium — light and durable — at no premium. Magcoa rollers give total maneuverability. 18 standard sizes — capacities to 4000 lbs.



PORTABLE YARD RAMPS

Solve your ground level loading problems! 32 std. mobile models — capacities to 100,000 lbs. Engineered to accommodate all equipment, load and height requirements.



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Circle 66 on Reader Service Card
MATERIAL HANDLING ENGINEERING

Republic Steel Names Boston Branch Manager

Richard N. Wells has been named Boston branch manager for Republic Steel Corp.'s Berger Division sales organization. He succeeds Fred T. Hackley, retired.

CLASSIFIED ADVERTISING

Rates: Cost of all ads in this section is \$20 for the first inch and \$15 for each additional inch or fraction. Rates for display ads in this section will be sent on request. All classified advertising is payable in advance.

HELP WANTED

SALES MANAGER for young, small, successful company manufacturing engineered systems and products for automated handling in distribution and manufacturing. High-level customer contacts and work with distributors requiring extensive travel. Send full details in confidence. Write Box 9261, MATERIAL HANDLING ENGINEERING, 812 Huron Road, Cleveland 15, Ohio.

Opportunities for Distributors to Market Package Handling Conveyors

Conveyor Specialty Company is looking for responsible distributors in several available areas who can capitalize on the profit and volume opportunities in



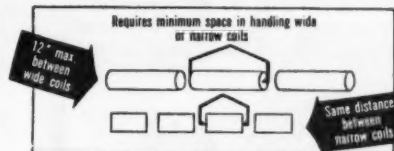
Handling Coil Stock?

CHECK THESE

C-F LIFTER ADVANTAGES

- 1 Lifter handles wide range of coil sizes
- Requires minimum of only 10" to 12" between piles — saves storage room
- 1 man operation — eliminates hookers
- Positive grip on coil — no damage to material

• C-F Coil Lifters are saving time and labor in many plants and warehouses because they can pick up, carry and set down a coil of steel faster and safer than any other method. Infinite jaw



openings permit handling a very wide range of coil widths... carrying legs open fast, stay open until operator closes them on coil. Narrow legs require minimum space between piles — a space saving advantage. Made in motorized models for crane cab or pendant operation as well as manual types with chain wheel, in capacities from 3 tons up. Powered Rotating Heads available. Opening ranges to suit your requirements. Write for illustrated Bulletin.

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1320 South Kilbourn Avenue • Chicago 23, Illinois

WIRE-TAINERS



Immediate Delivery
... at cost saving prices

STANDARD SIZES 2,000 and 4,000 lb. Capacities

WIDTH	LENGTH	HEIGHT
32	40	24
*32	40	28
36	46	24
40	48	24
*40	48	30
48	48	24

They
Stack
LOADED
OR
FOLDED

*Side or End Gate Models

WRITE FOR FREE LITERATURE

SPRINGPORT
STEEL Products Co.
SPRINGPORT • MICHIGAN



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September, 1961

TOKHEIM High-Vacuum HAND PUMPS for industrial liquids



Here's an all 'round utility pump that saves much more than its cost in speeding production, improving housekeeping, preventing waste. Eliminates slippery floors and liquid accumulation so often the cause of fire and accidents. Delivers 20 gallons per 100 back and forth strokes. Pumps oil and many other liquids. (Write for approved list.) Has hose or spout outlet. Call your dealer, your Tokheim representative, or write factory.



General Products Division

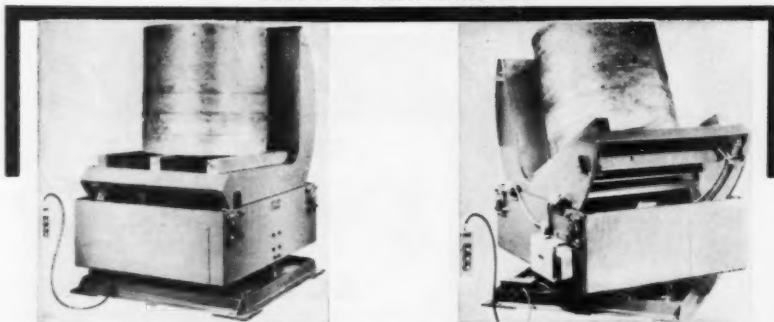
TOKHEIM CORPORATION

1668 WABASH AVENUE

FORT WAYNE, INDIANA

Subsidiaries: GenPro Inc., Shelbyville, Indiana; Tokheim of Canada, Ltd., Toronto, Ontario; Tokheim International, A. G., Lucerne, Switzerland

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UPEND AND ROTATE COILS 180° SIMULTANEOUSLY with a **MANSAVER**® COIL POSITIONER

Mansaver floor-mounted coil positioners complement Mansaver Coil Grabs and provide maximum efficiency in coil upending and downending operations. Mansaver Coil Positioners are offered hand operated, motor-driven and hydraulic. A positioner can be supplied to handle a wide range of coil sizes and capacities. The Mansaver illustrated above is a motor-driven coil positioner on an integral turntable to allow coils to be upended or downended and rotated 180° in the horizontal plane, separately or simultaneously. V-bed and flat-bed roller conveyor sections are optional on all Mansaver Positioners. For further information and prompt quotation, send us your specifications.

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the complete line of Unibilt package handling conveyors and engineered systems. These units and systems feature unitized, pre-engineered design, and are backed by 35 years' experience in design, manufacture and application engineering. Write for complete information: CONVEYOR SPECIALTY COMPANY, INC., 33 Newport Ave., North Quincy 71, Mass., Attention Mr. R. E. Vergobbe.

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**Silicone
lubricants
survive
oven heat**

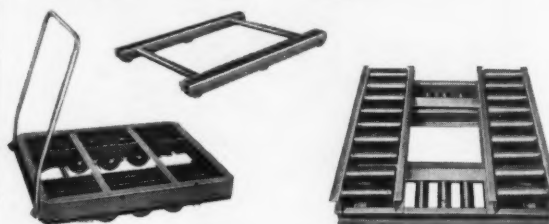
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intermittently — won't cause
Dow Corning silicone lubricants to
thin out, bleed or oxidize. Silicone oils
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operation of ball bearings in any use.
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FREE SAMPLE

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PALLET DOLLIES



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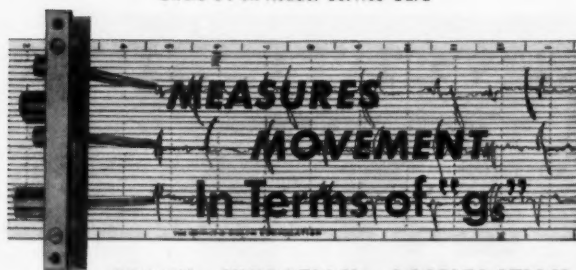
OLSON CONVEYORS

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MATERIAL HANDLING ENGINEERING

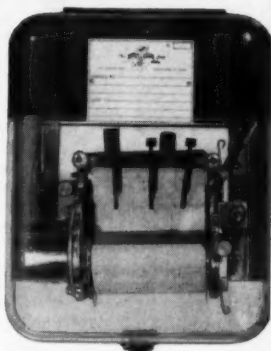


SHOCK—VIBRATION—ACCELERATION

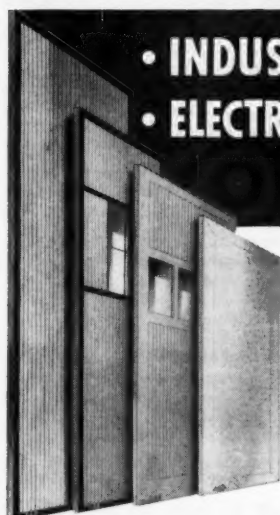
IMPACT-O-GRAPH has long been used by engineers and scientists engaged in tests that involve the measurement of movement be it shock, vibration or acceleration.

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R-W manufactures a complete line of doors, door hardware, fire doors and hardware and automatic electric operators that are specifically designed to economically meet the rugged demands of industry . . . and to fulfill these demands for years to come. Provides one dependable source for all of the equipment necessary to fill a door opening . . . components are "made for each other" to provide a perfect match. For the ultimate in quality, service, dependable operation and over-all economy—make your industrial door installations 100% R-W Equipment. Write today for free catalogs.

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September, 1961

New Use-Reports Show HOW EDG-PAK PREVENTS DAMAGE, SAVES MONEY!



2 CRITICAL EDGES



3 STEEL STRAPPING



1 Nested Automobile Stampings. Sharp flanges don't shear or punch through Edg-Pak's "Strength of Steel" wire inner construction. Adjoining surfaces are fully protected. Edg-Pak doesn't fall off . . . Spring-Grip holds tight—speeds up handling—reduces manpower needs!

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Fully Hydraulic . . .
Lower Cost . . . Sizes For
All Pallets

This Weld-Bilt All-Hydraulic Lift Truck will save time and labor maneuvering your single or double-faced pallets. It's an easy-rolling, lightweight, inexpensive Weld-Bilt that is built for tough daily service in plant or warehouse. Seven booster rollers on each fork assure easy pallet entry and withdrawal. Extra product protection provided by Weld-Bilt cushioned action hydraulic lowering.



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MATERIALS HANDLING ENGINEERS

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Automatic TRUCK AND RAIL DOCK SHELTERS

YEAR 'ROUND PROTECTION THAT
PAYS FOR ITSELF IN SAVINGS

OFFER EXCLUSIVE

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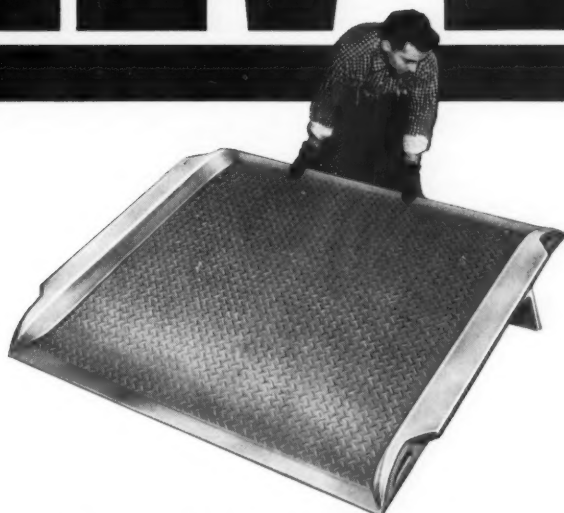


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MATERIAL HANDLING ENGINEERING

HEAVY



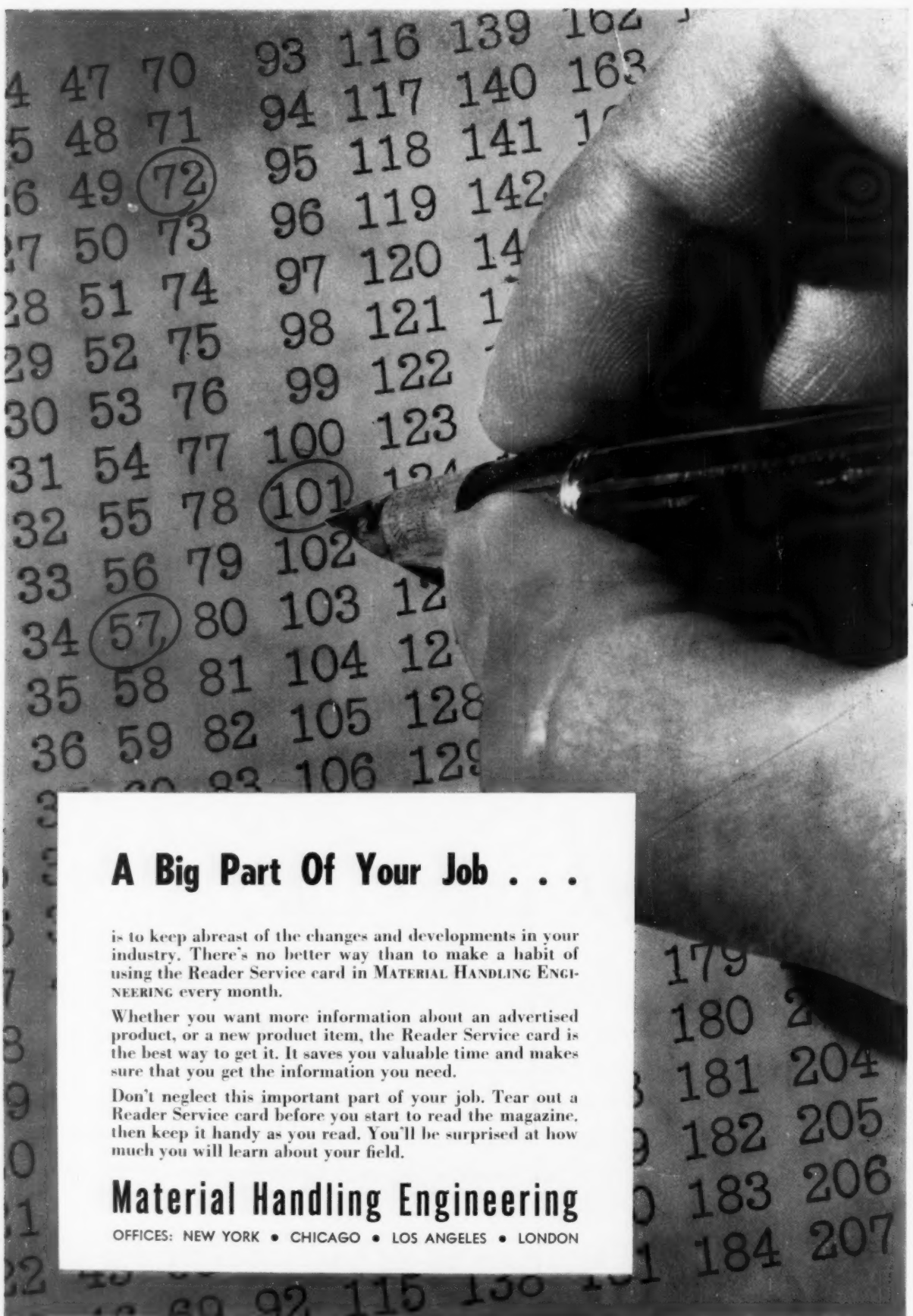
(Only on the Quality Side)

... that's why experienced buyers single out Magline as the safe source for magnesium dock boards. They've discovered there is a big difference in dock boards. Other boards might offer some of the rugged, long life construction features that Magline has developed over the years . . . but only Magliners provide all of them. Magline builds better dock boards, more of them, too. That's why you see so many around. Don't settle for less. Write for "Guidelines For Selecting A Quality Dock Board," Magline Inc., P. O. Box 19, Pinconning, Michigan.

MAGLINER DOCK BOARDS

MADE OF MAGNESIUM FOR EASY ONE-MAN HANDLING

Circle 65 on Reader Service Card



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